

Sessions for Friday, May 09

Friday, 08:00 AM - 09:30 AM

2	Friday, 08:00 AM - 09:30 AM, A602	Track: Purchasing and Supply Management
	Session: Application of innovative sourcing approaches	
	Chair(s): Jennifer McCormick	

051-1159 Inventory Replenishment Process for a Brazilian Public Sector Warehouse

Anna Paula Scheidegger, Student, Universidade Federal De Itajubá, Brazil
Fabio Favaretto, Professor, Universidade Federal De Itajubá, Brazil
Renato Lima, Associate Professor, Universidade Federal De Itajubá, Brazil
João Turroni, Associate Professor, Universidade Federal De Itajubá, Brazil

This work analyses the inventory replenishment process of a public sector warehouse. The paper proposes a multiple criteria materials classification based on utility theory, which points to a better organization and inventory control. This classification is used in a proposed new purchasing process.

051-1247 Delivering Innovation in Public Infrastructure: Traditional Procurement vs. Public Private Partnership

Nunzia Carbonara, Associate Professor, Politecnico Di Bari, Italy
Nicola Costantino, Professor, Politecnico Di Bari, Italy
Roberta Pellegrino, Associate Professor, Politecnico Di Bari, Italy

The aim of this paper is to help public sector make better decisions about the kinds of public infrastructure delivery method to be adopted in order to foster innovation. With this aim we develop a simple framework that relates the public infrastructure delivery methods and the types of innovation.

051-1298 Logistics Services Purchasing and Commoditization

Wendy Tate, Associate Professor, University of Tennessee Knoxville, United States
Jennifer McCormick, Student, University of Tennessee Knoxville, United States

Though logistics service providers often benefit their customer with competitive advantage, many are struggling with differentiation and shrinking profit margins. Their customers often primarily focus on price rather than quality or services offered. This study explores the relationships among commoditization, buying behavior, and logistics services.

3	Friday, 08:00 AM - 09:30 AM, A701	Track: Closed Loop Supply Chains
	Session: Behavioral and Empirical research in CLSC and Sustainable Ops	
	Chair(s): Gal Raz James Abbey	

051-0023 Pricing for New and Remanufactured Products: Do Segments Matter?

James Abbey, Assistant Professor, Texas A&M University College Station, United States
Joseph Blackburn, Professor, Vanderbilt University, United States
Daniel Guide, Professor, Penn State University University Park, United States

Do consumers for remanufactured products demonstrate homogeneous price-taking behavior? Does the presence or lack of homogeneity among consumers have implications for pricing strategies? Through a mix of lab studies, general population experiments, and economic models, this research addresses these and other questions regarding pricing for remanufactured consumer products.

051-0024 Effects of the Rana Plaza Tragedy on Shareholder Value

Brian Jacobs, Assistant Professor, Michigan State University, United States
Vinod Singhal, Professor, Georgia Institute of Technology, United States

The April 2013 collapse of the Rana Plaza building resulted in over 1,100 fatalities and 2,500 injuries. What effect did this tragedy have on the shareholder value of apparel firms with significant sourcing in Bangladesh? Anecdotal evidence suggests serious consequences. We undertake a rigorous study to examine this question.

051-0086 Economic and Environmental Assessment of Remanufacturing in a Competitive Setting

Gal Raz, Associate Professor, University of Virginia, United States
Anton Ovchinnikov, Assistant Professor, University of Virginia, United States
Vered Blass, Lecturer, Tel Aviv University, Israel

This paper provides data-driven assessment of economic and environmental aspects of remanufacturing under competition. We study a product-line competition where one firm is selling new products and the other new and refurbished products. We use analytical and behavioral models to examine the impact of remanufacturing on the firms' competition.

051-0301 Reducing Consumer Returns: A Field Study in the Jewellery Industry

Necati Ertekin, Student, Texas A&M University College Station, United States
Michael Ketzenberg, Associate Professor, Texas A&M University College Station, United States

We conduct a field experiment with 50 national jewelry stores that implement different practices to reduce consumer returns at the retail store level for 6 months. We identify the best practices by comparing these stores to a control group for the same time period by analyzing retail sales transaction data.

4	Friday, 08:00 AM - 09:30 AM, A702	Track: Empirical Research in Operations Management
	Session: Supply Chain Resilience	
	Chair(s): Siddharth Rastogi	

051-0726 Reactive Capacity of the Supply Chain in Mexican industry: PLS-SEM Empirical Study

Miguel Estrada, Professor, Ipade Business School, Mexico

Reactive capacity of the supply chain is one of the most important near-shore strategical levers in Mexico's industry. This empirical study based on PLS-SEM analysis over 70 companies survey, shows conclusions about the characteristics of this strategy, specifically to those one related to the knowledge transfer and reactive manufacturing practices.

- 051-1238** Retail Shrink and Cargo Theft: Tests of Routine Activity Theory
Christopher Swanton, Assistant Professor, College of Charleston, United States
Johnny Rungtusanatham, Professor, Ohio State University, United States
Kevin Linderman, Professor, University of Minnesota, United States

Each year, supply chains lose valuable inventory to theft. With the cooperation of two Fortune 500 companies, we study supply chain theft in the retail and cargo contexts. We use the tenets of Routine Activity Theory to investigate the efficacy of securitization initiatives on supply chain theft prevention.

- 051-0237** The Influence of Supply Chain Management Practices in the Enterprise Performance
Daniel Spina, Student, Fundacao Getulio Vargas, Brazil
Luiz Di Serio, Professor, Fundacao Getulio Vargas, Brazil
Luiz Brito, Professor, Fundacao Getulio Vargas, Brazil
André Luis Duarte, Professor, Insper Institute for Education and Research, Brazil

This empirically research identified which are the SCM practices that should be adopted by managers in order to bring superior performance for their companies. Therefore, it was analyzed about 800 worldwide firms spread across 13 different industries to understand the impact of 31 practices in five enterprise operational performance indicators.

- 051-1362** Does Supply Chain Integration Result in More Disruptions and More Opportunistic Behavior?
Siddharth Rastogi, Student, Ohio State University, United States
Johnny Rungtusanatham, Professor, Ohio State University, United States

Supply Chain Integration (SCI) has been touted for its many benefits. This paper explores whether or not SCI (a) increases the frequency of disruptions in the Supply Chain and (b) leads to more instances of opportunistic behavior with survey data from 500 medium-sized discrete manufacturers across 14 industries.

6	<p>Friday, 08:00 AM - 09:30 AM, A704 <i>Track: Sustainable Operations</i></p> <p>Session: Case Studies on Sustainable Operations</p> <p>Chair(s): Carla Gómez</p>
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- 051-1115** A Case Study of CSR Involving a Manufacturing industry in Peru
Patricia Quiroz, Professor, Pontificia Universidad Catolica Del Peru, Peru

This paper shows the best practices in Corporate Social Responsibility of a Peruvian company that works with their stakeholders with a sustainable development approach. This is inherent to their organizational culture and it reflects in the Strategic and operational plans, covering the Economic balance, social balance and environmental balance.

- 051-0471** Efficient Reverse Supply Chain Cleans the Immense City
Claude Machline, Emeritus Professor, Fundacao Getulio Vargas, Brazil

This paper aims to describe and analyze the innovations introduced in São Paulo- the largest Western World city, hosting 12 million inhabitants- to collect and remove urban waste and rubble, an herculean task. These ideas could constitute a valuable contribution to other very large cities in similar stage of development.

- 051-0202** From Using Cooking Oil to Soap: The Role of the Stakeholders to Implement the Reverse Logistic Program
Ana Paula Correa, Student, Federal University of Pernambuco, Brazil
Carla Gómez, Professor, Federal University of Pernambuco, Brazil

This paper analyzes the role of stakeholders in implementing a reverse logistics program in a Brazilian soap company from the sustainability perspective. Actions from consumers, the government and the company are presented according to the proposed program for collecting used cooking oil for soap production.

- 051-0826** Growth and/or Development that is the Question!
Luis Rodrigues, Professor, GMAP | UNISINOS, Brazil
Maria Isabel Morandi, Assistant Professor, GMAP | UNISINOS, Brazil
Ana Francisco, Student, GMAP | UNISINOS, Brazil
Daniel Lacerda, Professor, GMAP | UNISINOS, Brazil
Luis Felipe Camargo, Assistant Professor, GMAP | UNISINOS, Brazil

This article evaluates the opportunities of social investments in a "wealthy poor city" in Brazil. It uses System Thinking and System Dynamics Models to present four possible scenarios. Social and economic investments, among other variables are interrelated in a model that visualizes the impacts on the city's GDP and HDI.

7	<p>Friday, 08:00 AM - 09:30 AM, A705 <i>Track: Healthcare Operations Management</i></p> <p>Session: Decision Making in Healthcare</p> <p>Chair(s): Vishal Ahuja Jonathan Helm</p>
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- 051-0032** Active Postmarketing Drug Surveillance for Multiple Adverse Events
Joel Goh, Student, Stanford University, United States
Margret Bjarnadottir, Assistant Professor, University of Maryland, United States
Mohsen Bayati, Assistant Professor, Stanford University, United States
Stefanos Zenios, Professor, Stanford University, United States

We propose a method for drug surveillance, based on queueing networks and sequential hypothesis testing, which captures multiple adverse events and their interactions. Through simulation studies, we verify that our method delivers Type I/II errors that are below pre-specified levels and is robust to distributional assumptions.

051-0037 Preventing Preventable Readmissions: Designing Post-Discharge Monitoring Plans

Jonathan Helm, Assistant Professor, Indiana University, United States

In 2008, over 17% of Medicare patients were readmitted within 30 days, accounting for more than \$15 billion in cost, of which \$12B was found to be preventable. We design optimal post-discharge monitoring strategies to detect adverse events before they cause a preventable readmission.

051-0053 Issuing Policies for Hospital Blood Inventory

Alireza Sabouri, Student, University of British Columbia, Canada

Tim Huh, Associate Professor, University of British Columbia, Canada

Steven Shechter, Assistant Professor, University of British Columbia, Canada

We propose a model for allocating red blood cells for transfusion to patients, which is motivated by recent evidence suggesting that transfusing older blood is associated with increased mortality rate. We study the properties of blood issuance policies that balance the trade-off between quality and efficiency.

051-0118 Should Hospitals Keep their Patients Longer? Impact of Medicare Penalties on Length of Stay and Readmissions

Song-Hee Kim, Student, Columbia University, United States

Carri Chan, Assistant Professor, Columbia University, United States

Ann Bartel, Professor, Columbia University, United States

Under the Affordable Care Act, hospitals with higher than expected 30-day readmission are being financially penalized. Using retrospective data on patients enrolled in different Medicare programs, we develop an understanding its potential impact and how it relates to the interplay between financial and medical incentives in providing hospital care.

Friday, 08:00 AM - 09:30 AM, A706

Track: Healthcare Operations Management**Session:** Patient Satisfaction and Employee Behavior**Chair(s):** Dana Johnson**051-0681** Assess and Treat Programs in Respiratory Care

Ashley Metcalf, Assistant Professor, Ohio University, United States

Marco Habermann, Assistant Professor, Ohio University, United States

Tim Fry, Professor, University of South Carolina, United States

Employee empowerment initiatives transition decision making authority to frontline employees. In healthcare, the growing physician shortage combined with higher levels of inpatient demands force management to consider better utilization of frontline healthcare workers. This empirical study examines employee empowerment, or 'assess and treat', programs for inpatient Respiratory Care.

051-1403 Behavior Modification to Improve Quality

Paul St. Jacques, Associate Professor, Vanderbilt University, United States

Among other initiatives instituted to improve hand hygiene compliance, one tied to financial incentives had the most immediate impact on process and behavior with a correlated decrease in overall infection rates. Similar behavior management incentive programs may have a positive impact on behavior and quality in healthcare institutions.

051-0503 Analyzing Patient Satisfaction Surveys for Process Improvement

Dana Johnson, Professor, Michigan Technological University, United States

Roberta Russell, Professor, Virginia Polytechnic Institute And State University, United States

Sheneeta White, Assistant Professor, St. Thomas, United States

Patient satisfaction surveys are now mandated under the Affordable Care Act. Metrics on patient satisfaction can guide improvements in process and service quality if properly analyzed. This study examines patient satisfaction data from a hospital healthcare clinic and suggests in-depth analytics to yield insight into patient perceptions of quality.

Friday, 08:00 AM - 09:30 AM, A707

Track: Product Innovation and Technology Management**Session:** Managing Projects and Risks**Chair(s):** Mattia Bianchi**051-0381** Making Innovation Flow: Solving the Trade-off between Lean and Innovation

Mattia Bianchi, Assistant Professor, Stockholm School of Economics, Sweden

Anders Richtner, Assistant Professor, Stockholm School of Economics, Sweden

Niklas Modig, Lecturer, Stockholm School of Economics, Sweden

Can innovation processes be "leanified"? Lean may be the recipe to improve R&D productivity but its tenets seem in contradiction with the nature of innovation, e.g. standardization versus creativity. 42 interviews with managers of a high-tech company help identify challenges and solutions to achieve both art and science in innovation.

051-0598 A Theoretical Conceptual Model for Risk and Uncertainty Management in Projects

Joao Walter Vale, Student, University of São Paulo, Brazil

Marly Carvalho, Associate Professor, University of São Paulo, Brazil

This paper aims to systematize a conceptual framework of risks and uncertainties in project management. A systematic review of the literature was performed combining bibliometric and content analysis. The hive Structure of Risk and Uncertainty Management is proposed, mixing soft and hard approaches.

051-1044 Responsiveness in Flexible Environments as Paths to Reconfigurable Manufacturing Systems

Cesar Ortega, Student, UNIVERSIDAD NACIONAL AUTONOMA DE HONDURAS (UNAH), Honduras

Pedro Garrido-Vega, Associate Professor, Universidad De Sevilla, Spain

This work analyzes relationships from technology and other production programs from 314 plants worldwide, which support flexibility impacting responsiveness (main reconfigurable manufacturing system feature). Although results confirm practices linkages affecting responsiveness, plants show different paths (adoption focuses and practice types). Thus, proposing reconfigurable practices is not correct in all environments.

10	Friday, 08:00 AM - 09:30 AM, A708	<i>Track:</i> Production Planning and Scheduling
	<i>Session:</i> Production Planning and Firm Performance	
	<i>Chair(s):</i> Peter ZHANG Yusen Xia	

051-0389 An Empirical Analysis of Product Design Awards and the Market Value of the Firm

Yusen Xia, Associate Professor, Georgia State University, United States
 Peter ZHANG, Professor, Georgia State University, United States
 Vinod Singhal, Professor, Georgia Institute of Technology, United States

This paper empirically estimates the impact of effective design on the market value of the firm. We use a firm's receipt of a product design award as a proxy for its design effectiveness. We find that award announcements are associated with statistically significant positive stock market reactions.

051-0810 The Closed-loop Supply Chain Network with Competition and Design for Remanufactureability

Qiang Qiang, Assistant Professor, Penn State University Great Valley, United States

A two-period closed-loop supply chain network is investigated. The manufacturers make the decisions on production quantity and remanufactureability level, which will have impact on the production cost of the new product and remanufacturing cost in the second period. Through numerical examples, we answer several research questions related to the remanufactureability.

051-1234 Improving Scheduling Accuracy by Reducing Data Inconsistencies in Production Control

Günther Schuh, Professor, Aachen University, Germany
 Till Potente, Assistant Professor, Aachen University, Germany
 Christina Thomas, Assistant Professor, Aachen University, Germany
 Felix Brambring, Assistant Professor, Aachen University, Germany

The quality of production feedback data gathered on the shop-floor is regularly reduced by various data inconsistencies and errors which impair detailed scheduling accuracy. In this paper, an approach for reducing these inconsistencies in production feedback data by deriving error-specific integrity rules is presented and validated through a simulation study.

051-0754 The impact of OEE indicator on improvement of results in production management: case studies

Renato Monaro, Assistant Professor, FAJ - Faculdade de Jaguariúna, Brazil
 Carolina Bortoli, Intern, Itron, Brazil
 Amanda Oliveira, Process Analyst, Magnetti Marelli, Brazil
 Camila Rulim, Student, FAJ - Faculdade de Jaguariúna, Brazil

This paper presents case studies abording the use of indicators for continuous improvement on production management through the impacts from application of OEE (Overall Equipment Effectiveness) indicator in companies. At the end gains in reaction time to problems and more precise actions have been shown.

13	Friday, 08:00 AM - 09:30 AM, M102	<i>Track:</i> Inventory Management
	<i>Session:</i> Advances in Inventory and Supply Chain Management	
	<i>Chair(s):</i> Wei Luo	

051-0199 The Return of the Bullwhip

Ton De Kok, Professor, Eindhoven University of Technology, Netherlands

We present a one-warehouse multi-retailer inventory system with unknown stationary demand. We assume exponential smoothing for forecasting. A dynamic base stock policy controls retail and warehouse orders. We provide explicit formulas for the Bullwhip amplification and show the existence of an optimal forecast frequency.

051-0238 On the Implications of Measuring Bullwhip Effect with Material Flow Data

Li Chen, Assistant Professor, Duke University Durham, United States
 Wei Luo, Assistant Professor, IESE Business School, Spain
 Kevin Shang, Associate Professor, Duke University Durham, United States

We study the variability of shipment and sales in a classic inventory system under base-stock control policy. We show the conditions under which this variability will amplify or dampen along the supply chain. Our study bridges the gap between the theoretical and empirical research on the bullwhip effect.

051-0957 On the Stockpiling Strategies under Cost Uncertainty in Storage-capacitated Two-echelon Systems

Shiliang Cui, Student, University of Pennsylvania, United States
 Gerard Cachon, Professor, University of Pennsylvania, United States

A two-echelon production-distribution model is presented for the operation of a firm whose responsibility is to produce and perhaps stockpile sufficient quantities of a certain commodity (because the production cost fluctuates over time). We show that optimality needs to be achieved with supply chain coordination when there are storage constraints.

051-1161 Retailing with Opaque Products

Adam Elmachtoub, Student, Massachusetts Institute of Technology, United States
 Yehua Wei, Assistant Professor, Duke University Durham, United States

Opaque products are products where consumers do not know product's characteristics before the purchase. We propose a strategy that (online) retailers sell opaque products directly alongside traditional products. Our results show that this strategy can greatly reduce the retailer's cost, while not diminishing its profit or market share.

14	Friday, 08:00 AM - 09:30 AM, M103	<i>Track:</i> Manufacturing Operations
	<i>Session:</i> Socially Responsible Manufacturing and Operations	
	<i>Chair(s):</i> Krishna Sundar Diatha	

051-0324 A Closed-loop, Mobile Workflows-based Personalized Treatment Scheduling System for Public Health Monitoring

Krishna Sundar Diatha, Professor, Indian Institute of Management Bangalore, India
Shashank Garg, CEO, Handheld Solutions & Research Labs, India

This paper describes a closed-loop mobile workflows-based system for personalized treatment schedules, automated tracking and monitoring of Tuberculosis patients to ensure adherence to treatment protocols. The proposed tracking & scheduling system helps in improving treatment success rates, prevent the development of more aggressive forms of multi-drug resistant tuberculosis in patients.

051-0820 The Relationship of Social Capital and Operational Performance

Juliana Celestini, Student, UNISINOS, Brazil
Iuri Gavronski, Assistant Professor, UNISINOS, Brazil
Hale Kaynak, Professor, University of Texas Pan American, United States

We surveyed firms in the apparel and accessories industry, in Brazil, to investigate the relationship of social capital with the operational performance of the buyer. Preliminary results (n=78) show that the dimensions of operational performance of the buyer relate differently with each dimension of social capital.

051-0506 Alignment in Unorganized Supply Chain: A Process Oriented Assessment of Handloom Industry in Orissa, India

Santosh Mahapatra, Associate Professor, Clarkson University, United States
Winfred William, Professor, Xavier Institute of Management, India
Ramakrishna Padhy, Director, National Productivity Council, India

Handloom industry is skill based and unorganized with little opportunity for economies scale or scope. Aligning operations for innovation or efficiency is difficult. Yet, alignment is crucial for all stakeholders. Using case studies, this study provides insights into the scope for operational alignment in unorganized supply chains.

051-0323 Two Substitutable Perishable Product Disaster Inventory Systems

Sarma Yadavalli, Professor, University of Pretoria, South Africa
Krishna Sundar Diatha, Professor, Indian Institute of Management Bangalore, India
udayabhaskaran S, Lecturer, Vel Tech Dr RR & Dr SR Technical University, India

In this paper, a continuous review two substitutable perishable product disaster inventory model is proposed and analyzed. An adjustable joint reordering policy for replenishment is adopted. There is no lead time and replenishment is instantaneous. Stationary behavior of the model is also considered some measures of system performance are obtained.

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Friday, 08:00 AM - 09:30 AM, M104

Track: Marketing and OM Interface

Session: Customer Driven Operations Management

Chair(s): Muge Yayla-Kullu M. Ali Ulkü

051-0502 Optimal Multipart Pricing in Service Industry

M. Ali Ulkü, Assistant Professor, School of Management and Leadership, United States

Motivated by the current pricing practices in rental industry, a multipart pricing scheme is developed for a start-up company in service industry that faces competition from an incumbent. The demand is modeled on consumer's service needs taken as private information. Structural optimality results and accompanying comparative statistics are provided.

051-0553 Collaborative Sourcing and Product Differentiation

Muge Yayla-Kullu, Assistant Professor, Rensselaer Polytechnic Institute, United States

We discuss how and when supply chain alliances in terms of collaborative sourcing benefit partner firms. We take heterogeneity of the customer base into account. When the products of firms are differentiated, we find that joint consideration of sourcing, pricing, and demand generation objectives may result in non-trivial outcomes.

051-0555 Service Operations and the Overall Image of the Firm

Praowpan Tansitpong, Assistant Professor, Suny New Paltz, United States
Muge Yayla-Kullu, Assistant Professor, Rensselaer Polytechnic Institute, United States

We study how the overall image of the firm is affected by its service operations performance. We use the airline industry to test our hypotheses. We find that fast response to customer requests, high cabin presence, good quality in-flight products, and well-designed check-in operations have significant positive effects.

051-0557 High Product Variation in the Airline Industry

Praowpan Tansitpong, Assistant Professor, Suny New Paltz, United States
Muge Yayla-Kullu, Assistant Professor, Rensselaer Polytechnic Institute, United States

This paper explores how product variation in a quality-differentiated product line determines the overall success of a firm in the marketplace. For example, airlines provide multiple options (e.g. seat sizes, recliners, wifi and personal tv, etc.) in different aircrafts. We empirically investigate the impact of such variation under operational constraints.

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Friday, 08:00 AM - 09:30 AM, M106

Track: OM and Economic Models

Session: Topics in OM and Economic Modeling

Chair(s): Alper Nakkas

051-1393 The Bullwhip Effect in Infinite Time

Chung-Yean Chiang, Assistant Professor, Georgia Southern University, United States

The bullwhip effect has been discussed for almost two decades. Solutions to the bullwhip effect were provided since studies showed that the bullwhip effect leads to significant downside to business performance. However, recent studies still showed the existence of the bullwhip effect in various industries and countries. These findings lead to an interesting question that is the bullwhip effect unavoidable. This study applies the Box-Jenkins transfer function to investigate the existence of the bullwhip effect from an economic perspective. The author expects to answer the mentioned question that whether the bullwhip effect is really an issue.

051-1291 Boundary Conditions for Economics Driven Objective Functions in Project Scheduling

Anurag Agarwal, Professor, University of South Florida, United States
Ramakrishna Govindu, Lecturer, University of South Florida, United States

Project scheduling is often driven by many different types of objectives within the time, cost and scope trinity. We take a deeper look at these objectives and propose some boundary conditions driven by project circumstances and the economic criteria of marginal costs and revenues that render certain objective dominant.

- 051-1265** Capacitated Lot Sizing Problem under Competition
Alejandro Lamas, Student, Universit   Catholique De Louvain, Belgium
Philippe Chevalier, Professor, Universit   Catholique De Louvain, Belgium

We study simultaneous decisions of pricing and operations of competitors when demands are price sensitive. We model the operations planning of each competitor as a Capacitated Lot Sizing Problem over an interval of time. This leads to a repeated game, the solution of which corresponds to a mixed Nash equilibrium.

- 051-0156** The Impact of Valuation Heterogeneity and Network Structure on Equilibrium Prices in Supply Chain Networks
Alper Nakkas, Assistant Professor, Sungkyunkwan University, Korea, Republic of (South Korea)
Yi Xu, Assistant Professor, University of Maryland, United States

Supply chains can be very complex and highly asymmetric structures. We analyze complex supply chain structures and provide intuition for the impact of these structures on the surplus sharing between manufacturers and their suppliers.

17	Friday, 08:00 AM - 09:30 AM, International 2	<i>Track:</i> General Track
	<i>Session:</i> Mediation Analysis Workshop	
	<i>Chair(s):</i> Jason Miller Johnny Rungtusanatham	

- 051-0493** Mediation Analysis Workshop
Jason Miller, Student, Ohio State University, United States
Johnny Rungtusanatham, Professor, Ohio State University, United States

New, more appropriate methods for mediation analysis have been recently introduced in quantitative psychology. This workshop provides a hands-on demonstration of why these methods should be replacing the more familiar methods such as the Baron and Kenny approach and Sobel test. WORKSHOP Leaders: Jason Miller & Johnny Rungtusanatham

19	Friday, 08:00 AM - 09:30 AM, International 4	<i>Track:</i> Behavior in Operations Management
	<i>Session:</i> Pricing and Negotiation in B2B Interactions	
	<i>Chair(s):</i> Anna Devlin	

- 051-0942** Experimental Investigation of Salesforce Pricing Decisions
Rashmi Sharma, Student, Penn State, United States
Saurabh Bansal, Assistant Professor, Penn State University University Park, United States
Elena Katok, Professor, University of Texas Dallas, United States
Peter Rimshnick, Research Scientist / Advisory Software Engineer, IBM, United States

We model salesforce pricing decisions under the uncertainty of getting a contract, and various incentive schemes. We identify three classes of projects with specific risk profiles, and the incentive schemes best suited for each. Subsequently, we test pricing decisions in a lab to identify behavioral factors that influence pricing decisions.

- 051-1085** Strategic Supplier Choice: Negotiating Transactional Value Versus Relational Equity
Sandy Jap, Professor, Emory University, United States

We examine the relative roles of economic transaction value and relational assets (i.e., trust and specific investments) in 250 strategic purchase negotiations and demonstrate the mediating role of these assets, the direct effect of negotiation strategies and the quadratic effect of the supplier's change in offer value on supplier choice.

- 051-1105** The Effect of Historical Prices and Buyer-Supplier Relations on Current Prices
Anna Devlin, Student, University of Maryland, United States
Wedad Elmaghraby, Associate Professor, University of Maryland, United States

In this work, we analyze data from a wholesale produce broker to investigate salesperson pricing. Specifically, we study the effect of past prices and structure of the buyer-supplier relationship on how salesman set current prices.

- 051-0284** Behavioral Evidence on the Over(Under) Usage of the Fast Dual Sourcing Mode in Supply Chains
Tam  s Csermely, Student, Vienna Univ of Econ & Business Admin, Austria
Stefan Minner, Professor, Technische Universitat Munchen, Germany

In our laboratory experiment, a single-echelon setting with dual sourcing is introduced. We focus on the fast option's over(under)usage compared to normative theory and the underlying behavioral explanations (risk, loss and regret aversion). We investigate the behavioral motivations of out(in)sourcing by framing the fast option as an express order/external options.

20	Friday, 08:00 AM - 09:30 AM, International 5	<i>Track:</i> Supply Chain Contracting
	<i>Session:</i> Innovation and Supply Chain Management	
	<i>Chair(s):</i> Hyoduk Shin	

- 051-0214** Co-Opetition in Services : The Boardwalk Phenomenon
Xuchuan Yuan, Student, National University of Singapore, Singapore
Lucy Chen, Assistant Professor, National University of Singapore, Singapore
Srinagesh Gavirneni, Associate Professor, Cornell University, United States

Service firms that compete on price and waiting time can cooperate on entertainment and reduce customer waiting cost. We study monopoly and duopoly settings with independent and shared entertainment efforts and show that such a co-opetition strategy enables competing service firms to achieve higher profits than monopoly settings.

051-1112 Sharing Aggregate Inventory Information With Customers: A Strategic Way of Cross-selling

Ruomeng Cui, Student, Northwestern University, United States

Hyoduk Shin, Assistant Professor, University of California San Diego, United States

Why do some firms share their inventory information with customers? We provide an answer to this question through an angle of product variety. We also show why firms share partial (or aggregate) inventory information with their customers rather than full information or no information by considering cross-selling of differentiated products.

051-1124 Coordination of Component Compatibility in New Product Development

Timofey Shalpegin, Student, Hec Paris, France

Zhixi Wan, Assistant Professor, University of Illinois Urbana-Champaign, United States

Large-scale new product development (NPD) projects often require component suppliers to adjust their components to be compatible with each other and fit the final product. Meanwhile, some suppliers leave their components intact. We study how centralized versus decentralized decision on which components should be modified influences the NPD project outcome.

051-1242 Teaming Up for Long-Term Sustainable Performance: A Game-Theoretic Model of Voluntary Horizontal Alliances

Changrong Deng, Student, The Fuqua School of Business, United States

Sasa Pekec, Associate Professor, The Fuqua School of Business, United States

Jeannette Song, Professor, The Fuqua School of Business, United States

Motivated by various forms of horizontal collaboration in global supply chains and their success, we use a repeated-game to model the rationale and dynamics of team formation. We also identify team sizes that induce such collaboration in equilibrium, and extend the framework to a principal-agent setting.

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Friday, 08:00 AM - 09:30 AM, International 6

Track: Service Operations

Session: Organizing for Service Delivery

Chair(s): Ornella Benedettini

051-0292 Organizational and Operational Capabilities in Service Coproduction

Renato Przychynski, Student, UNISINOS, Brazil

Rafael Teixeira, Student, UNISINOS, Brazil

Claudia Bitencourt, Professor, UNISINOS, Brazil

We propose and empirically test a B2B service coproduction capabilities model and its effects on service performance. We collected data from 300 telecommunication B2B service users to validate our measurement instrument and test our hypotheses. Results demonstrate the effects of coproduction capabilities on service performance and point to future studies.

051-0693 Service Offering and Financial Performance: The Role of Company Characteristics

Ornella Benedettini, Lecturer, University of Cambridge, Italy

Morgan Swink, Professor, Texas Christian University, United States

Andy Neely, Professor, Cambridge University, United Kingdom

Drawing on several theoretical perspectives on the determinants of organisational performance, the study seeks to identify company characteristics that can significantly predict servitization outcomes. Empirical data from 81 unsuccessful servitized manufacturers and 227 successful competitors are contrasted to develop insights on how companies can achieve the best fit with services.

051-0138 Evaluation of Service Configurations During Good Times and Bad: A Longitudinal Study of the US Hotel Industry

Jie Zhang, Assistant Professor, University of Vermont, United States

Rohit Verma, Professor, Cornell University, United States

This study presents a longitudinal analysis of the evolutionary patterns of resource allocation driven by operations decisions. Cluster analysis identifies groups of service outlets with distinct resource configurations at three points in time in a cyclical industry. We examine the relationship between outlet's financial performance and cluster membership over time.

051-0673 Use of the SCOR Framework in Service Industries: An Exploratory Research

Andres von Simson, Professor, CEETPS Centro Estadual de Educação Tecnológica Paula Souza, Brazil

Getulio Akabane, Professor, Ceetps Centro Estadual de Educação Tecnológica Paula Souza, Brazil

Eliane Simoes, Professor, Ceetps Centro Estadual de Educação Tecnológica Paula Souza, Brazil

Helena Petrossi, Professor, Ceetps Centro Estadual de Educação Tecnológica Paula Souza, Brazil

This paper aims to verify the possibility of using the SCOR model (Supply Chain Council), in service companies. It is essential to produce reference models that lead effective results and differentiation in the services sector. Therefore this paper elucidates the feasible way of applying the framework in the services environment.

23

Friday, 08:00 AM - 09:30 AM, International 8

Track: Supply Chain Management

Session: Investigating Supply Chain Relationships

Chair(s): Marcelo Bradaschia

051-0402 A Methodology for Modeling Interoperability in a Context of Cooperative Industrial Networks

Izunildo Cabral, Student, UNIDEMI, Faculdade de Ciências e Tecnologia, Portugal

Antonio Grilo, Assistant Professor, UNIDEMI, Faculdade de Ciências e Tecnologia, Portugal

This study aims to develop a methodology to support the design of industrial network platforms that are able to deliver high level of interoperability and the analysis of impact of interoperability on the performance of firms, in terms economical, social and environmental, using the axiomatic design theory and agent-based simulation.

051-0725 Upstream and Downstream Relationships: What does it Differ in Operational Performance ?

Guilherme Martins, Professor, Insper Institute for Education and Research, Brazil
 Ricardo Martins, Professor, Univ Federal Do Minas Gerais, Brazil
 André Luís Duarte, Professor, Insper Institute for Education and Research, Brazil
 Luciano Rossoni, Professor, Universidade do Grande Rio, Brazil

This article aims to verify when operational performance is affected by two types of relationship embeddedness between firms and byers and suppliers. Based on 75 focal firms and their ties, our results point out that relational embeddedness reinforces structural embeddedness. Upstream and downstream relationships differ while affecting quality and productivity.

051-0012 A House Divided against Itself Cannot Stand: Managing Knowledge to Optimize Supply Chain Networks

Marina Mattered, Assistant Professor, Universidad Europea de madrid, Spain

Optimizing Supply Chain Management requires understanding the Supply Chain Network in which any given firm is immersed. In this context, knowledge production, diffusion and management becomes a key element in integrating the agents involved in the network, thus building strong relationships throughout the Supply Chain, effectively and efficiently creating value.

051-1004 Trustworthiness as a Firm Asset

Marcelo Bradaschia, Student, Fundacao Getulio Vargas, Brazil

Trust is essential in every supply chain collaboration strategy and trustworthiness is trust's most important antecedent. Nevertheless, trustworthiness has never been studied as an asset of the firm which can be managed though RBV and Relational View lenses. This theoretical paper aims to fill this gap.

051-0808 Supply Chain Collaborative Strategies: A Complete Dyadic Valuation Approach

Rui Padrao, Student, Oporto University - Faculty of Engineering - Portugal, Portugal
 Alcibiades Guedes, Professor, Oporto University - Faculty of Engineering - Portugal, Portugal

This conceptual paper presents a dyadic valuation model for supply-chain collaborative solutions, centered on a synergistic approach which encompasses both operational and financial synergies. The model stands on the premise that client-supplier collaboration and vertical acquisitions can be seen as alternative solutions, and should be evaluated with similar theoretical frameworks.

24

Friday, 08:00 AM - 09:30 AM, International 9

Track: Sustainable Operations

Session: Sustainable Operations Management

Chair(s): Michael Galbreth

051-0275 The Influence of Process Effects and Institutional Forces on Implementation of Energy Savings Initiatives

Glen Dowell, Associate Professor, Cornell University, United States
 Suresh Muthulingam, Assistant Professor, Cornell University, United States

We use constructs derived from routine-based views of the firm and from institutional theory to examine factors that affect the adoption of energy-savings initiatives. We find that process effects and environmental norms affect the implementation of such initiatives. Further, the impact of environmental norms decreases with increasing process effects.

051-0544 The Value of Allowing Consumer Returns in Online Retailing: Evidence from EBay

Guangzhi Shang, Student, University of South Carolina, United States
 Pelin Pekgun, Assistant Professor, University of South Carolina, United States
 Mark Ferguson, Professor, University of South Carolina, United States
 Michael Galbreth, Associate Professor, University of South Carolina, United States

When shopping for experience goods online, consumers value the opportunity to return an item when there is a misfit. Using data from EBay, where identical items are often sold by sellers with heterogeneous return policies, we quantify the value of allowing returns and provide return policy guidance for online retailers.

051-1304 Effects of Buyer Safeguards on Sales and Prices of New, Remanufactured, and Used Products

Necati Tereyagoglu, Assistant Professor, Georgia Institute of Technology, United States
 Ravi Subramanian, Associate Professor, Georgia Institute of Technology, United States
 Ramanath Subramanyam, Associate Professor, University of Illinois Urbana-Champaign, United States

Using detailed transaction-level data, we explore how seller- and product-specific attributes influence sales and prices paid for new, remanufactured, and used products. We find evidence that the effects of these attributes vary across these product types. Our findings have implications for research on secondary markets and closed-loop supply chains.

051-1348 Carbon Tariff Effects in Settings with Technology Choice and Foreign Production Cost Advantage

David Drake, Assistant Professor, Harvard University, United States

Carbon tariffs have emerged as a possible mechanism to address carbon leakage, imposing carbon costs on imports at border. I show that carbon leakage can result despite the implementation of a carbon tariff. However, when leakage does occur, global emissions can decrease, which contrasts existing results and conventional wisdom.

25

Friday, 08:00 AM - 09:30 AM, International 10

Track: Humanitarian Operations and Crisis Management

Session: Research of Use: Applications for Improvements in Humanitarian Logistics

Chair(s): Marianne Jahre

051-0567 Refugee Camps: Relief and Development Perspectives

Maria Besiou, Associate Professor, Kuehne Logistics University, Germany

Refugee camps are typically temporary settlements built to receive refugees in case of disasters. However, there are camps where refugees are living for more than ten years. We look into the issues that arise under these different conditions for the humanitarian organizations operating in the camps.

051-0654 Practice And Theory - Warehouse Network Optimisation for UNHCR

Marianne Jahre, Professor, BI Norwegian Business School, Norway

Joakim Kembro, Student, Lund University, Sweden

Traditionally humanitarian organisations have based warehouse locations on individuals' experience and knowledge, rather than decision support tools such as network optimisation models. This paper presents a study undertaken for UNHCR aiming to develop an applicable warehouse location support tool by considering the most relevant contextual factors.

051-0460 On and Off-shore Prepositioning and Delivery Mechanism for Sudden-Onset Disaster Response

Kaustubh Navangul, Student, BI Norwegian Business School, Norway
 Mehdi Sharifyazdi, Associate Professor, BI Norwegian Business School, Norway
 Marianne Jahre, Professor, BI Norwegian Business School, Norway

This paper develops an optimization model based on real-world cases to find a low-cost logistics solution for on- and off-shore based prepositioning of emergency supplies in combination with suitable modes of transport for timely satisfaction of demand of disaster relief items in the aftermath of sudden-onset disasters.

26	Friday, 08:00 AM - 09:30 AM, International B	<i>Track:</i> Humanitarian Operations and Crisis Management
	<i>Session:</i> Immediate Response and Emergency Services	
	<i>Chair(s):</i> Richard Oloruntoba	

051-0150 A Facility Location Model of Wounded Attention and Triage Centers (WATC) after a Catastrophic Earthquake

Fidel Torres, Professor, Universidad De Los Andes, Colombia

This study seeks to implement an optimization model for locating wounded attention and triage centers (WATC) few days after a catastrophic earthquake in a big city. The purpose of the model is to maximize the number of wounded people treated, in terms of resources and personnel required.

051-0902 The Immediacy of Relief Provision Capability For Alleviating Destitution Among Disaster Affected Populations

Agha Ali, Professor, University of Massachusetts Amherst, United States
 Guven Ince, Student, University of Massachusetts Amherst, United States

We address the alleviation of destitution faced by populations impacted by a disaster, by categorizing populations with respect to their level of destitution. The optimization model that we develop, is used to examine the impact of delays in bringing supplies and transport and manpower/handling capabilities to full operational levels.

051-1427 Challenges to Response Operations of the 2009 Black Saturday Bushfires

Richard Oloruntoba, Lecturer, Newcastle Business School, Australia, Australia

The paper identifies operational issues contributing to mortality during 'black Saturday' bushfires; and highlights operations management implications, using document / content analysis; and interviews with Incident Commanders. Study finds that: climate; arson; poor communication, and evacuation issues are key issues. Further research into early warning, evacuation and ecological policy to save lives is required.

27	Friday, 08:00 AM - 09:30 AM, International C	<i>Track:</i> Supply Chain Risk Management
	<i>Session:</i> Incentives in Supply Risk Management	
	<i>Chair(s):</i> Woonam Hwang	

051-1176 Inducing Reliable Supply with Incentives: The Interplay of Supply Risk, Bargaining Power, and Process Design

Woonam Hwang, Student, London Business School, United Kingdom
 Nitin Bakshi, Assistant Professor, London Business School, United Kingdom
 Victor DeMiguel, Associate Professor, London Business School, United Kingdom

Unreliable supply in a decentralized supply chain can be mitigated through the supplier's effort, but effort is often not contractible, resulting in moral hazard. We identify when simple wholesale-price contracts can induce high reliability, and also find that multitask moral hazard can actually mitigate the problem of incentive alignment.

051-1284 The Impact of Operational Disruptions on Firm Risk

William Schmidt, Assistant Professor, Cornell University, United States
 Ananth Raman, Professor, Harvard University, United States

We present evidence from a large sample empirical study that disruptions due to factors under the firm's control are more damaging to firm value than those due to factors outside the firm's control. This result persists after accounting for earnings differences, providing evidence that such disruptions increase perceived firm risk.

051-1123 Dynamic Supply Risk Management under Information Asymmetry

Long Gao, Assistant Professor, University of California Riverside, United States
 Nan Yang, Assistant Professor, Washington University St Louis, United States

We study a dynamic supply risk management problem with private supply risk information, incentives for information misreporting and underinvestment in quality. Our study shows how to motivate the supplier to truthfully share the supply state and invest in quality improvement, as well as when to terminate the relationship.

051-0852 Contracting for Continuity in Front-end Service Operations

Marc Jansen, Student, Cambridge University, United Kingdom
 Nektarios Oraiopoulos, Assistant Professor, Cambridge University, United Kingdom
 Daniel Ralph, Professor, University of Cambridge, United Kingdom

Major interruptions of front-end service operations are high-profile and costly, with costs increasing relative to the duration, frequency and proximity of outages. This paper examines how contract choice between an IT vendor and client can mitigate downtime costs given the allocation of responsibilities.

29	<p>Friday, 10:00 AM - 11:30 AM, A602 <i>Track: Purchasing and Supply Management</i></p> <p><i>Session:</i> Supply uncertainty, purchasing centralization, and quantity discounts</p> <p><i>Chair(s):</i> Charles Munson</p>
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- 051-1188** Multi-Product Resource Capacity Decisions under Quantity Discounts
Jonathan Jackson, Student, Washington State University Pullman, United States
Charles Munson, Professor, Washington State University Pullman, United States

Purchasing managers face a difficult task of determining order quantities for multiple products when facing quantity discounts and resource constraints. The problem complexity increases when the resource capacity becomes a decision variable. Our efficient algorithm determines effective order quantities and resource capacity level for various functional forms of capacity cost.

- 051-0797** The Fundamental Trade-off in a Supplier Selection Problem
Alexander Rothkopf, Senior Lecturer, University of Wuerzburg, Germany
Richard Pibernik, Professor, University of Wuerzburg, Germany

Firms face a fundamental trade-off when allocating purchasing volumes across a number of suppliers: while volume discounts favour volume consolidation, supply default risks suggest a more balanced volume allocation and a larger supply base. We study this trade-off and identify conditions where the decision is not straightforward.

- 051-1118** An Integrated Vendor Selection and Inventory Problem with Multi-sourcing and Lateral Transshipments
Burcu Keskin, Associate Professor, University of Alabama Tuscaloosa, United States
Mohammad Firouz, Student, University of Alabama Tuscaloosa, United States
Sharif Melouk, Associate Professor, University of Alabama Tuscaloosa, United States

We study a vendor selection problem of a firm operating multiple plants. Each plant faces stationary stochastic demands and hold inventory. To mitigate the risks arising from vendor quality, capacity, and disruptions, the firm allows multi-sourcing and lateral transshipments. Using a simulation-optimization approach, we determine critical factors and decisions.

- 051-1186** How Much is Supplier Speed and Reliability Worth?
Xun Xu, Student, Washington State University Pullman, United States
Charles Munson, Professor, Washington State University Pullman, United States

Purchasing managers constantly search for suppliers with short lead times and on-time deliveries, but how valuable are such attributes? We determine justifiable price premiums for supplier speed and reliability by considering buyers' total logistics cost, which includes purchasing, ordering, holding, and investment costs, under both deterministic and stochastic demand environments.

30	<p>Friday, 10:00 AM - 11:30 AM, A701 <i>Track: Closed Loop Supply Chains</i></p> <p><i>Session:</i> Strategic Issues in Product Recovery Operations</p> <p><i>Chair(s):</i> Cerag Pince</p>
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- 051-1275** Lemons, Trade-ins, and Remanufacturing
Ximin Huang, Student, Georgia Institute of Technology, United States
Atalay Atas, Associate Professor, Georgia Institute of Technology, United States
Beril Toktay, Professor, Georgia Institute of Technology, United States

Trade-in programs have been shown to partially mitigate the lemons problem in secondary markets. In this paper, we show when and how remanufacturing traded-in products can further improve the efficiency in secondary markets.

- 051-0843** Inter-temporal Product Line Strategies under Refurbishing of Consumer Returns
Narendra Singh, Student, Georgia Institute of Technology, United States
Karthik Ramachandran, Assistant Professor, Georgia Institute of Technology, United States
Ravi Subramanian, Associate Professor, Georgia Institute of Technology, United States

We study product line decisions for a firm offering a new product in the first period and both new and refurbished products in the second period to strategic consumers. The refurbished products offered in the second period are from consumer returns of the new products sold in the first period.

- 051-0084** Sales Force Compensation for Remanufactured Products
Jeremy Kovach, Student, Georgia Institute of Technology, United States
Atalay Atas, Assistant Professor, Georgia Institute of Technology, United States
Sumitro Banerjee, Assistant Professor, European School of Management and Technology, Germany

We investigate sales force management practices of a firm that sells new and remanufactured products in the same market. We examine the optimal compensation plans offered by the firm and how sales force incentives affect the profitability of remanufacturing when demand for new and remanufactured products is stochastic.

- 051-0536** Extracting Maximum Value from Consumer Returns
Cerag Pince, Assistant Professor, Kuehne Logistics University, Germany
Mark Ferguson, Professor, University of South Carolina, United States
Beril Toktay, Professor, Georgia Institute of Technology, United States

Identifying the best joint pricing and disposition strategy is a challenging but important decision for consumer electronics OEMs. This paper investigates how a consumer electronics OEM should dynamically price new and refurbished products, and allocate consumer returns between remarketing and warranty claim coverage options over the product's short life cycle.

31	<p>Friday, 10:00 AM - 11:30 AM, A702 <i>Track: Empirical Research in Operations Management</i></p> <p><i>Session:</i> Empirical Research in Operations (I)</p> <p><i>Chair(s):</i> Aravind Chandrasekaran</p>
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051-0550 Technology vs. Mediation in Online Waste Exchanges: A Quasi-Experiment

Suvrat Dhanorkar, Student, University of Minnesota, United States
Kevin Linderman, Professor, University of Minnesota, United States

Waste Exchanges (WEs) can divert millions of tons of waste from being disposed annually but face challenges due to high buyer uncertainty and low seller commitment. To overcome this, many WEs earlier offered intermediary services which are being discontinued in favor of decentralized online markets. We study the operations of

051-0967 Unpacking the Effects of Manager-Worker Collocation in Knowledge Work: A Study in the IT Services Industry

Rocio Bonet, Assistant Professor, Instituto De Empresa, Saint Vincent and the Grenadines
Fabrizio Salvador, Professor, IE Universidad, Spain

Building on agency theory we discuss how co-location of a worker with its supervisor may adversely affect worker performance in the context of knowledge work. Conversely, worker-supervisor co-location positively affects worker performance when control is centralized and interdependencies among project tasks increases.

051-1051 Incentives and Competition in Unblind Innovation Contests

Jesse Bockstedt, Assistant Professor, University of Arizona, United States
Cheryl Druehl, Assistant Professor, George Mason University, United States
Anant Mishra, Assistant Professor, George Mason University, United States

Innovation contests are being widely used by firms to generate creative solutions to complex problems. Using a large panel dataset of unblind innovation contests from an online logo-design platform, we examine the interplay of prize amount and contestant's prior winning experience on the dynamics of competition in unblind innovation contests.

32

Friday, 10:00 AM - 11:30 AM, A703

Track: Sustainable Operations

Session: Emerging Sustainability Issues

Chair(s): Frank Wiengarten

051-0326 Occupational Accidents and Financial Performance under Unsafe Conditions

Frank Wiengarten, Assistant Professor, Esade Business School, Spain
Mark Pagell, Professor, University College Dublin, Ireland
Chris Lo, Assistant Professor, Hong Kong Polytechnic Univ, Hong Kong

This research investigates the antecedents of workplace accidents and their impact on a firm's financial performance through analyzing secondary data collected from the UK Health & Safety Executive Register of Prosecutions and Notices and the Bureau Van Dijk Database on UK firms.

051-1319 Disposal or Donation? Understanding Consumer Disposal Choices for Used Goods

Dayna Simpson, Assistant Professor, Monash University, Australia
Damien Power, Professor, University of Melbourne, Australia
Kathleen Riach, Associate Professor, Monash University, Australia
Daniel Guide, Professor, Penn State University University Park, United States

Reverse supply chains rely on used goods to be returned by consumers to disposal points. Very little operations management research however has explored consumer preferences during this process. We identify two main disposal profiles that depend on a consumer's: a. attachment to their possession, and b. their desire to give.

051-0424 Collaboration for Sustainability in Food Supply Chains - A Survey

Vahid Mirzabeiki, Assistant Professor, Cranfield University, United Kingdom
Denyse Julien, Senior Lecturer, Cranfield University, United Kingdom
Carlos Mena, Reader, Cranfield University, United Kingdom
Soroosh (Sam) Saghir, Lecturer, Cranfield University, United Kingdom
Michael Bourlakis, Professor, Cranfield University, United Kingdom

The purpose of this paper is to identify how collaboration of actors of food supply chains can lead to improving the sustainability-related aspects of operations, including the environmental, social and economic aspects. The research is conducted through a survey and the data is analysed using Partial Least Squares (PLS) method.

33

Friday, 10:00 AM - 11:30 AM, A704

Track: Retail Operations Management

Session: Field Studies in Retail Operations

Chair(s): Nicole DeHoratius

051-0007 Using Transactions Data to Improve Consumer Returns Forecasting and Retailer Practices

Guangzhi Shang, Student, University of South Carolina, United States
Mark Ferguson, Professor, University of South Carolina, United States
Michael Galbreth, Associate Professor, University of South Carolina, United States

Using a dataset provided by a major U.S. retail chain and consisting of 20,801 transactions of 2,483 electronic products, we develop an econometric model that simultaneously explains the consumer's experience duration and return probability, which are in turn used for predicting return quantity in a given time period.

051-1197 Inventory Management in Online Retailing

Jason Acimovic, Assistant Professor, Penn State University State College, United States
Stephen Graves, Professor, Massachusetts Institute of Technology, United States

Inventory management in online retailing presents new challenges that warrant new research. A collaboration with an online retailer has uncovered some of these challenges. We present findings that have led to both cost savings and insights for the online retailer, as well as new and interesting problems for research.

051-1329 A Model for Analyzing Online Consumer Shopping Behavior

Vishal Gaur, Professor, Cornell University, United States

We partner with an online retailer and an online search advertising firm to model consumer browsing behavior and identify levers for increasing demand.

051-1374 Impact of Improved Manufacturer Service Levels on Retailer Demand

Nathan Craig, Student, Harvard University, United States

Nicole DeHoratius, Professor, University of Chicago, United States

Ananth Raman, Professor, Harvard University, United States

We examine with data from different contexts, the impact of manufacturer service levels on retailer demand levels. The relationship between manufacturer service levels and retailer demand levels affects a manufacturer's willingness to carry additional inventory or incur costs to deliver better service levels.

34

Friday, 10:00 AM - 11:30 AM, A705

Track: Healthcare Operations Management

Session: Improving OR Efficiency and Utilization

Chair(s): Srimathy Mohan

051-0226 Selecting a Winning Team: Dynamic Portfolio Management for Surgical Team Allocation

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

Armagan Bayram, Lecturer, University of Massachusetts Amherst, United States

We develop decision models and identify policies to improve operating room performance through optimal configuration of surgical teams. The team allocations consider individual and joint experiences of team members, as well as stochastic dynamic learning effects over time. A numerical analysis based on robotic surgery data is also presented.

051-0359 Predicting Operating Room Daily Case Volume

Vikram Tiwari, Assistant Professor, Vanderbilt University, United States

William Furman, Professor, Vanderbilt University, United States

Warren Sandberg, Professor, Vanderbilt University, United States

Variability in daily surgical case volume suboptimizes the level of resources, which are planned months in advance. Using regression and other analytical techniques, models for predicting volume weeks in advance were developed. Post implementation, cost savings through OR closure are noted. Methodology was replicated at another facility with similar results.

051-0579 Communicating Accurate Case Start Times for Surgeries

Robert Allen, Student, Clemson University, United States

Kevin Taaffe, Associate Professor, Clemson University, United States

Lawrence Fredendall, Professor, Clemson University, United States

Joel Greenstein, Associate Professor, Clemson University, United States

Nathan Huynh, Assistant Professor, University of South Carolina, United States

Jose Vidal, Associate Professor, University of South Carolina, United States

Discrete event simulation was used to simulate surgical cases in the operating room and to test different "right shifting" and case updating policies for their effectiveness. Results indicate that there is a window of delay within which an update should be made; otherwise performance will suffer.

051-0908 Multi-Objective Operating Room (OR) Planning and Scheduling for Hospitals

Srimathy Mohan, Associate Professor, Arizona State University Tempe, United States

Qing Li, Research Analyst, Arizona State University Tempe, United States

Mohan Gopalakrishnan, Associate Professor, Arizona State University Tempe, United States

John Fowler, Professor, Arizona State University Tempe, United States

This paper models the operating room (OR) planning and scheduling problem as a mixed integer program with multiple objectives. A "multi-objective simulation-optimization" approach is developed for the problem to address uncertainties in surgery and recovery durations and patient no-shows. This approach guides the search of "Pareto optimal solutions."

35

Friday, 10:00 AM - 11:30 AM, A706

Track: Healthcare Operations Management

Session: The Impact of Lean in Healthcare

Chair(s): Olga Matthias

051-0709 Lean Thinking in the Healthcare Sector: Experience from an Indian Hospital

Gopalakrishnan Narayanamurthy, Student, Indian Institute of Management Kozhikode, India

Anand Gurumurthy, Associate Professor, Indian Institute of Management Kozhikode, India

The experience of implementing lean thinking in the core process of a super specialty hospital located in southern part of India is described. Problems in the process were identified and mapped to seven wastes in lean management. Solutions based on lean principles/practices were implemented and improvements were evaluated through performance measures.

051-1090 The Impact of Lean Implementation on Hospital Quality and Efficiency Performance

Yong-Taek Min, Student, School of Management, United States

Jay Kim, Associate Professor, School of Management, United States

Joseph Restuccia, Professor, School of Management, United States

Michael Schwartz, Professor, Boston University, United States

First, we examine the extent of lean implementation in hospitals using a large survey data set from 470 nationwide hospitals. Then, we analyze process, outcome, and perceived quality, and efficiency for each hospital using multiple CMS data sets. Last, we empirically assess the impact of lean implementation on hospital performance.

051-0315 The Impact of Lean Practices and Organizational Resource on Operational Performance in Hospitals

Prattana Punnakitkashem, Assistant Professor, Mahidol University, Thailand

Lean management with organizational resources is recognized to improve hospital service operations. This research explores the extent to which lean management practices are adopted by hospitals in Thailand. Multiple regression analysis was conducted to understand the relationship between lean practices, organizational resource and operational performance in healthcare setting.

051-0031 Accidental Lean? Would a Defined Operations Strategy Help Performance Improvement?

Olga Matthias, Senior Lecturer, University of Bradford, United Kingdom

Drawing on empirical evidence gathered from a management consultant-led change programme focused on improving performance in one key area, I examine the activities and outcomes at the Northern Teaching Hospital Trust (NTHT) and reflect on the role of operations strategy in healthcare operations and how it could help improve performance.

36 Friday, 10:00 AM - 11:30 AM, A707 *Track:* Product Innovation and Technology Management
Session: Entrepreneurship and Open Innovation
Chair(s): Luiz Alves

051-0429 Challenges for Entrepreneurs in Social Venture Business in Brazil

Gustavo Gomes, Engineer, BNDES, Brazil
 Bruno Milanez, Associate Professor, Universidade Federal De Juiz De Fora, Brazil
 Luiz Alves, Professor, Universidade Federal De Juiz De Fora, Brazil

Social venture businesses are considered a lucrative alternative for solving problems such as poverty, malnutrition, and education in markets with high purchasing potential as the base of the pyramid. This paper presents the results of a survey of social entrepreneurs in Brazil, highlighting their main challenges and key success factors

051-0813 Open Innovation - Comparing Global, Regional and Local Approaches

Lars Bengtsson, Professor, University of Gävle, Sweden

Innovation processes increasingly rely on collaboration between partners providing unique competencies to the focal firm. The purpose is to compare global, regional and local approaches to open innovation in terms of openness, integration and performance. The results are based on a survey of 415 manufacturing firms in five European countries.

051-0816 Managing Knowledge Integration in 3D Open Innovation

Lars Bengtsson, Professor, University of Gävle, Sweden

Open innovation processes can vary along three dimensions of openness concerning partners, phases and content. The purpose is to analyze how the different forms of openness relate to knowledge integration efforts and innovation outcomes. The study is based on a survey of 415 manufacturing firms in five European countries.

37 Friday, 10:00 AM - 11:30 AM, A708 *Track:* Revenue Management and Pricing
Session: Industry Panel: Revenue Management and Pricing
Chair(s): Pelin Pekgun

051-0509 Industry Panel: Revenue Management and Pricing

Pelin Pekgun, Assistant Professor, University of South Carolina, United States
 Ronald Menich, EVP and Chief Scientist, Predictix, United States
 Douglas LaPointe, Senior Director, Product Management & Support, The Rainmaker Group, United States
 Jon Higbie, Managing Partner and Chief Scientist, Revenue Analytics, United States
 Stan Ward, Sr. Practice Director, JDA Software, United States

In this panel, leading solution providers in the revenue management and pricing field will discuss current trends and new directions in various industries, including retail, travel, hospitality and leisure.

39 Friday, 10:00 AM - 11:30 AM, M101 *Track:* Information Systems
Session: Impact of IS on Electronic Commerce, Risk Management, and Quality Assurance
Chair(s): Hila Etzion Guanyi Lu

051-0193 Quality of Offshore Knowledge Work: The Role of Social Capital

Shirish C. Srivastava, Associate Professor, Hec Paris, France

Quality of knowledge work produced by offshore vendors has always been a matter of concern for the clients. Grounding our research in social capital theory, we hypothesize and empirically examine the role of social capital between the client and vendor, in influencing the quality of the offshore work output.

051-0170 Optimal Revenue Sharing Contracts for Daily-deal Websites

Shivendu Shivendu, Assistant Professor, University of California Irvine, United States
 Zhe Zhang, Student, University of California Irvine, United States

In this paper, we develop a stylized two-period Stackelberg game-theoretic model to analyze the strategic interaction between heterogeneous merchants and a daily-deal website. Merchants take into consideration the sampling, advertising and cannibalization effects in deciding their discounting and participation strategy. We highlight the critical role of marginal cost in website's strategy.

051-0505 Food Safety and Quality Assurance in China: The Role of Information and Communication Technology

Xitong Guo, Associate Professor, Harbin Institute of Technology, China
 Guanyi Lu, Assistant Professor, College of Business, United States
 Yulin Fang, Associate Professor, City University of Hong Kong, Hong Kong
 Douglas Vogel, Professor, City University of Hong Kong, Hong Kong

Food safety is a societal challenge and a particularly salient and perennial problem. Using multiple empirical methods, we study how Information and Communication Technology affects the implementation of a large food safety assurance program initiated by the Chinese government. We identify opportunities for interventions that can potentially help the implementation.

051-0721 High Sellout Risk -- Order Soon! Strategic Provision of Inventory Information Online and Inventory Management

Hila Etzion, Assistant Professor, University of Michigan Ann Arbor, United States

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

Technological advances have allowed firms to communicate real time information about inventory and product availability to prospective consumers in an online channel. In this paper, we examine how this ability may impact consumer purchasing behavior, the sellers' optimal stocking strategy, and social welfare.

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Friday, 10:00 AM - 11:30 AM, M103

Track: Manufacturing Operations

Session: Empirical research in TQM, lean and six sigma - 1

Chair(s): Run Niu

051-0795 Business Process Management and its Results in a Blinds Manufacturing Company

Eduarda Espindola, Student, Universidade Federal De Juiz De Fora, Brazil

Luiz Alves, Professor, Universidade Federal De Juiz De Fora, Brazil

The article presents the development of a methodology for implementing business process management and its subsequent application in a medium-sized company that manufactures blinds. The observed results demonstrated the elimination of rework and its attendant costs, in addition to the integrated holistic view of the organization's essential processes.

051-0300 Quality Management Practices in China: Antecedents and Performance Outcomes

Ying Fan, Assistant Professor, University of Colorado Colorado Springs, United States

Run Niu, Assistant Professor, Webster University, United States

The study focuses on quality management (QM) in action rather than how firms label their QM programs. In-depth interviews with managers of 12 companies in China were conducted to reflect their QM practices. Ground theory approach is applied to identify antecedents to QM practices, which in turn drive quality performance.

051-0798 Lean Manufacturing Applied in a Large Company in the Brazilian Steel Industry

Diogo Rocha, Student, Universidade Federal De Juiz De Fora, Brazil

Luiz Alves, Professor, Universidade Federal De Juiz De Fora, Brazil

The article presented the results of the application of lean manufacturing "tools" based on mapping the value chain in a large company from the Brazilian steel industry that produces civil construction components. The results showed significant cost reduction and a consequent increase in the competitiveness of the company.

051-0875 Lean Six Sigma: The Contribution to the Resilience and Organizational Competitiveness

Sergio Mazini, Professor, University Center Toledo Araçatuba, UNITOLED, Brazil

This paper discusses the importance of concepts like Lean Manufacturing, Six Sigma and Lean Six Sigma and the contribution to the resilience and to organizational competitiveness. The chapter also discusses the strategic role of information and information technology. The research method is the case study conducted in Brazilian industrial companies.

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Friday, 10:00 AM - 11:30 AM, M104

Track: Marketing and OM Interface

Session: Operations Challenges in Channel Management

Chair(s): Sreekumar Bhaskaran

051-0367 Online Auctions and Multichannel Retailing

Hila Etzion, Assistant Professor, University of Michigan Ann Arbor, United States

Many sellers of unique items utilize online auctions while trying to sell the items in their offline retail location for a posted price. In this paper we use analytical and empirical approaches to show that characteristics of the demand in the seller's offline retail location influence her auction channel outcomes.

051-0952 Social Network Channels: The Impact of Word-of-Mouth Effects and Privacy Issues

Gulver Karamemis, Student, University of Florida, United States

Asoo Vakharia, Professor, University of Florida, United States

Naren Agrawal, Professor, Santa Clara University, United States

Prior research on channel design has documented the benefits of a direct (online) channel to complement traditional channels. The focus of our paper is to extend this research and analyze whether a firm operating a direct channel should also establish a social network presence.

051-0985 Playing God: Role of Intermediary in Matching Markets

Rajiv Mukherjee, Assistant Professor, Southern Methodist University, United States

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

Amit Basu, Professor, Southern Methodist University, United States

We examine the role of an intermediary in matching markets like marriage and labor. In this context, an online intermediary's optimal positioning and pricing strategy is developed. The role of competition and social norms is also considered.

051-1343 Channel Management in Emerging Economies

Saibal Ray, Professor, McGill University, Canada

Aditya Jain, Assistant Professor, Indian School of Business, India

Mehmet Gumus, Associate Professor, McGill University, Canada

Harish Krishnan, Associate Professor, University of British Columbia, Canada

In this presentation, we discuss the prevailing retail landscape in India and the possible effects of the entry of big-box retailers on the channel relationships in such a setting. Our focus is on presenting the different challenges that we have encountered while analytically modeling such channel management issue.

43	Friday, 10:00 AM - 11:30 AM, M106	<i>Track:</i> OM and Economic Models
	<i>Session:</i> Economic Issues in Supply Chain Management	
	<i>Chair(s):</i> Ying-Ju Chen Yen-Ting Lin	

051-0098 Optimal Carbon Capture and Storage Contracts Using Historical CO2 Emissions Levels

Wenbo Cai, Assistant Professor, New Jersey Inst of Technology, United States
 Dashi Singham, Assistant Professor, Naval Postgraduate School, United States
 Joshua White, Research Scientist, Lawrence Livermore National Laboratory, United States

The CCS technology is developed to mitigate greenhouse gas emissions by collecting CO2 from its sources and storing it underground. We develop a "Pay-at-the-gate" model to determine the optimal price and volume of contracts to maximize the storage operator's expected profit while encouraging the participation of the emissions sources.

051-0145 Sustainable Product Line Design Using Co-Product Technology

Yen-Ting Lin, Assistant Professor, University of San Diego, United States
 Haoying Sun, Assistant Professor, Texas A&M University College Station, United States
 Shouqiang Wang, Assistant Professor, Clemson University, United States

A monopolist manufactures products using a scarce raw material. The monopolist can introduce a single product, or multiple products using different grades of the raw material. Consumers are heterogeneous in valuing product quality and its resource consumption. We examine the monopolist's product line design strategy and its environmental implications.

051-0828 Job Allocation for Multi-Factory Production with a Consideration of Fairness

Ling-Chieh Kung, Assistant Professor, National Taiwan University, Taiwan, Republic of China
 Ying-Ju Chen, Assistant Professor, University of California Berkeley, United States

In a multi-factory production environment, one should allocate jobs for not only profit maximization but also achieving fairness. We study how to allocate jobs to multiple factories by considering the fairness issue. Several objective functions and several measurements of fairness are examined. Comparisons and implications are then provided.

44	Friday, 10:00 AM - 11:30 AM, International 2	<i>Track:</i> General Track
	<i>Session:</i> Moderation Analysis Workshop	
	<i>Chair(s):</i> Jason Miller Johnny Rungtusanatham	

051-0494 Moderation Analysis Workshop

Jason Miller, Student, Ohio State University, United States

Complex moderation effects are increasingly being analyzed in empirical SCM research. This workshop demonstrates the use of the Johnson-Neyman (JN) technique to investigate three-way and curvilinear interaction effects with newly-developed tools available from quantitative psychology. WORKSHOP Leader: Jason Miller.

45	Friday, 10:00 AM - 11:30 AM, International 3	<i>Track:</i> Scheduling and Logistics
	<i>Session:</i> Vehicle Routing and Supply Chain Distribution	
	<i>Chair(s):</i> Anurag Agarwal	

051-1055 Distribution Logistics: The Customers' Allocation in the Multiple Facilities using as Reference Transportation

Alessandra Pereira, Student, Universidade Federal Rural do Rio de Janeiro, Brazil
 Murilo Oliveira, Professor, Universidade Federal Fluminense, Brazil
 Ilton Curty Leal Junior, , ,

Distribution Logistics is an important competitive advantage when the company serves customers demands with lower cost. The present study aims to analyze the problem of customers' allocation due the insertion of new nitrogen fertilizers units in the logistic networking design, minimizing transportation costs and hence, in the product's distribution process.

051-0968 A Practical Method to Predict the Degree of Customers' Satisfaction in a Special Industry

Zahra Zandi Ali Abadi, Student, Ardebil Branch, Islamic Azad University, Ardebil, Iran (Islamic Republic of), Iran (Islamic Republic of)
 nooshan aliee, Student, Graduate Faculty of Environment, University of Tehran, Iran (Islamic Republic of)
 Mahdi Abbasi, Reader, Saman Aria Petroleum Eng. Co. , Iran, Iran (Islamic Republic of)

To present a reliable approach, current study has provided some questioners to customers by accessing 15 distributors' organization database for evaluation of clients' satisfaction level. Fuzzy- Neural Inference method has analyzed received feedbacks. Last section provides an intelligent network to predict the clients' satisfaction in new activities

051-1292 Penalty Minimization in Supply Chain Scheduling for Multiple Customers

Anurag Agarwal, Professor, University of South Florida, United States
 Vaidy Jayaraman, Associate Professor, University of Miami, United States
 Anthony Ross, Professor, University of Wisconsin Milwaukee, United States
 Ramakrishna Govindu, Lecturer, University of South Florida, United States

We propose models, heuristics and results for a supply chain scheduling problem involving multiple customers operating in a just-in-time environment. The objective is to minimize penalties for late deliveries. The proposed heuristics involve splitting deliveries and lots to achieve its objectives.

46	Friday, 10:00 AM - 11:30 AM, International 4 <i>Session:</i> Sourcing and Inventories (I) <i>Chair(s):</i> Sebastian Villa Betancur	<i>Track:</i> Behavior in Operations Management
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- 051-0977** The Effect of Power on Biased Newsvendor Order Behavior: An Experimental Study
 Sebastian Villa Betancur, Student, University of Lugano, Switzerland
 Jaime Castaneda, Student, University of Lugano, Switzerland
 Paulo Goncalves, Associate Professor, University of Lugano, Switzerland

We extend behavioral research in newsvendor settings by experimentally exploring the effect of power on newsvendor order decisions under two profit conditions. We also analyze people's risk profiles and explore if the expo-power utility function, which relaxes the assumption of constant absolute risk aversion, explains observed behavior.

- 051-0590** Perceived versus Actual Value of Operational Flexibility: An Empirical Investigation
 Brent Moritz, Assistant Professor, Penn State University University Park, United States
 Saurabh Bansal, Assistant Professor, Penn State University University Park, United States

Firms often utilize flexible production capacity or inventory. Using a behavioral experiment where inventory can be substituted, participants overestimated the probability and extent that flexibility will be used, as well as the monetary value of flexibility. We test one approach to mitigate the overestimation.

- 051-0630** Revisiting Behavioral Economics and its Impacts in Buyer-Supplier Relationships
 Janaina Siegler, Student, Fundacao Getulio Vargas, Brazil
 Luiz Brito, Professor, Fundacao Getulio Vargas, Brazil

Although buyer-supplier relationships are among firms, decisions are made by people. This work revisits the application of Behavioral Economics to buyer-supplier relationships analyzing how human heuristics and biases can impact buyers and suppliers' decisions. Adding to the growing literature on Behavioral Operations, we develop several propositions for future testing.

- 051-0976** Retailers' Ordering Decisions under Delays: An Experimental Approach
 Sebastian Villa Betancur, Student, University of Lugano, Switzerland
 Paulo Goncalves, Associate Professor, University of Lugano, Switzerland
 Santiago Arango, Associate Professor, Universidad Nacional De Colombia, Colombia

In an experimental environment based on a mathematical model we tested subjects' ordering decisions in response to a surge in demand under different ordering and supplier capacity acquisition delays. Decisions are compared against an optimal solution. Results allow characterizing subjects' performance and formulating a heuristic that closely replicates subjects' behavior.

47	Friday, 10:00 AM - 11:30 AM, International 5 <i>Session:</i> Emerging issues in supply chain contracting and management <i>Chair(s):</i> Soo-Haeng Cho	<i>Track:</i> Supply Chain Contracting
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- 051-0110** Combating Child Labor: Incentives and Information Transparency in Supply Chains
 Soo-Haeng Cho, Assistant Professor, Carnegie Mellon University, United States
 Ying Xu, Student, Carnegie Mellon University, United States
 Sridhar Tayur, Professor, Carnegie Mellon University, United States

Extensive outsourcing has slowed child labor reform by encouraging firms to seek low labor costs. This paper examines the incentive of a multinational firm to combat child labor via its supply contract and internal monitoring. We also investigate potential effects of the supply chain transparency act in the U.S.

- 051-0771** Managing Suppliers: Joint Audit and Shared Supplier Information
 Xin Fang, Student, Carnegie Mellon University, United States
 Soo-Haeng Cho, Assistant Professor, Carnegie Mellon University, United States

Product safety incidents in recent years have compelled many manufacturers to rethink approaches to manage product quality of their suppliers. We consider two cooperative approaches: auditing common suppliers jointly and sharing independent audit results. We investigate their impacts on product quality and the incentives of competing manufacturers to cooperate.

- 051-1305** Supply Chain Contracting with Quality Choice
 Sang-Hyun Kim, Associate Professor, Yale University, United States
 Robert Swinney, Associate Professor, Duke University Durham, United States

We analyze the simultaneous choice of quality and inventory for seasonal goods in centralized and decentralized supply chains. We demonstrate that a centralized firm should choose quality and inventory to balance their joint elasticities. We analyze equilibrium behavior in a decentralized channel and illustrate several challenges to quality coordination.

- 051-0129** Channel Management and Product Design with Consumers' Probabilistic Choices
 Wenbo Cai, Assistant Professor, New Jersey Inst of Technology, United States
 Ying-Ju Chen, Assistant Professor, University of California Berkeley, United States

We study how a seller should design the prices and qualities of products sold in his direct and indirect channels under three schemes: independent pricing, revenue sharing and profit sharing in both personalized offering and general offering. We then compare the seller's optimal strategies and his profits among these schemes.

48	Friday, 10:00 AM - 11:30 AM, International 6 <i>Session:</i> Behavioral Research in Service Operations <i>Chair(s):</i> Mirko Kremer	<i>Track:</i> Service Operations
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- 051-1296** How do Delay Announcements Impact Customer Behavior: Experimenal Study

Gad Allon, Associate Professor, Northwestern University, United States
 Achal Bassamboo, Associate Professor, Northwestern University, United States
 Mirko Kremer, Assistant Professor, Penn State University State College, United States

Delay announcements are prevalent in service systems. This paper is among the first experimental work studying how customers react to explicit and realtime waiting time information on anticipated delays. In particular, we are interested in studying how such announcements impact customers' beliefs about the anticipated waiting times.

051-0114 Operational Transparency Improves Service Quality and Efficiency

Ryan Buell, Professor, Harvard University, United States
 Tami Kim, Student, Harvard University, United States
 Chia-Jung Tsay, Assistant Professor, University College London, United Kingdom

Experimental evidence suggests that operational transparency improves perceived and objective service quality while improving efficiency. Customers who observe employees engaged service delivery perceive greater effort, appreciate that effort, and value the service more. Employees who are able to observe customers feel more appreciated, and in turn, exert more effort.

051-1312 Learning about Service Quality from Lines of Different Length: Theory and Experiment

Chen Jin, Student, Northwestern University, United States
 Laurens Debo, Associate Professor, University of Chicago, United States
 Seyed Iravani, Professor, Northwestern University, United States
 Mirko Kremer, Assistant Professor, Penn State University State College, United States

We discuss rational and human decision making behavior in congested environments with quality uncertainty across servers and information asymmetry across customers. Our problem is motivated by initiatives of health authorities providing waiting time information for elective surgery, which is aiming at allowing patients to select the shortest queue.

051-0607 Experiencing Queuing Delay: To Wait or Not to Wait ...

Rick Hardcopf, Student, University of Minnesota, United States
 Karen Donohue, Associate Professor, University of Minnesota, United States

When a delivery process is operating at full capacity, this lab experiment evaluates a customer's desire to experience queuing delay "inside" the process, when the normative solution is to wait in a queue "outside" the process until capacity becomes available. The experimental context is new product development.

49	Friday, 10:00 AM - 11:30 AM, International 7	<i>Track:</i> Supply Chain Management
	<i>Session:</i> Interface of Marketing and Supply Chain Management	
	<i>Chair(s):</i> Tolga Aydinliyim	

051-0645 Quality and Pricing Decisions when Consumers Perceive Recycled Content Differently

Monire Jalili, Student, University of Oregon, United States
 Tolga Aydinliyim, Assistant Professor, Baruch College, United States
 Nagesh Murthy, Associate Professor, University of Oregon, United States

We consider a monopolist selling ordinary and green product variants to consumers whose differential (dis)utility vary by consumer type, and is a function of the firm's quality decision (i.e., the amount of recycled content.) We discuss how the optimal quality and pricing decisions drive demand and profit.

051-0758 Campaign Earlier or Later? Sponsored Search Advertising when Customers Re-click

Shengqi Ye, Student, Indiana University Bloomington, United States
 Goker Aydin, Associate Professor, Indiana University, United States
 Shanshan Hu, Assistant Professor, Indiana University Bloomington, United States

Customers might click a retailer's link and check its product multiple times before making purchasing decisions. Noting this behavior, we investigate the retailer's optimal advertising policy when selling seasonal products over a predetermined horizon. We show that the retailer may want to advertise aggressively early in the selling season.

051-0825 Financing Consumer Purchases - Optimal Credit Strategies for a Monopolistic Retailer

Robert Grueter, Student, Ebs Business School, Germany
 Hans S Heese, Professor, Ebs Business School, Germany

Consumer loans offered directly by retailers are an increasingly important marketing instrument. These loans enable credit-constrained customers to purchase needed goods. On the other hand, longer credit terms imply increased default risk for the retailer. We study a monopolistic retailer's optimal customer financing decisions under several strategies.

051-0903 How Production Technology Influences Introduction Timing of Product Line Extensions?

Shan Li, Assistant Professor, Baruch College, Zicklin School of Business, United States

We consider a manufacturer who faces two customer segments with different valuations of quality of a durable product. We propose an integrated framework which analyzes how production technology influences the introduction timing of product-line extensions, in the presence of demand cannibalization and economies of scale/scope.

50	Friday, 10:00 AM - 11:30 AM, International 8	<i>Track:</i> Supply Chain Management
	<i>Session:</i> Integration, Collaboration, and Supplier Performance	
	<i>Chair(s):</i> Tobias Engel	

051-0540 Impact of Organizational Culture on Supply Chain Integration

Odkhishig Ganbold, Student, Yokohama National University, Japan
 Anh Phan, Lecturer, University of Economics and Business, Hanoi, Vietnam
 Yoshiki Matsui, Professor, Yokohama National University, Japan

Organizational culture is a multidimensional phenomenon, and it is important for an organization to recognize the value of those dimensions from which it will benefit. The purpose of this study is to empirically examine the dimensions of the organizational culture that contribute to firm's integration with its suppliers and customers.

- 051-0705** An Ontology-based Platform to Collaboratively Manage Supply Chains
 Tobias Engel, Student, Technische Universitat Munchen, Germany
 Manoj Bhat, Student, Technische Universitat Munchen, Germany
 Vasudhara Venkatesh, Student, Technische Universitat Munchen, Germany
 Suparna Goswami, Senior Lecturer, Technische Universitat Munchen, Germany
 Helmut Krcmar, Professor, Technische Universitat Munchen, Germany

Setting up efficient supply chain (SC) networks is an important aspect of sourcing and SC management. We propose an ontology-based, knowledge-assisted platform to collaboratively create, adapt and steer SC networks. Such platforms allow reuse of domain knowledge captured in previous supply chain projects and supports simulation of various network configurations.

- 051-0669** Understanding the Influence of Supply Chain Governance on Supply Chain Performance
 Pietro Dolci, Professor, UNISC (Universidade de Santa Cruz do Sul), Brazil
 Antonio Carlos Maçada, Associate Professor, Universidade Federal do Rio Grande do Sul, Brazil
 Ely Paiva, Associate Professor, Fundacao Getulio Vargas, Brazil

The aiming is to analyze the influence of supply chain governance (SCG) and its conceptions (contractual-relational-transactional) on supply chain performance (SCP). It was carried out qualitative and quantitative steps to propose and validate a model. It was identified that SCG has a positive influence on operational and financial SCP.

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| 51 | Friday, 10:00 AM - 11:30 AM, International 9 | <i>Track:</i> Sustainable Operations |
| | <i>Session:</i> Regulation issues in CLSC and Sustainable Operations | |
| | <i>Chair(s):</i> Gal Raz | |

- 051-0087** The Social Impacts of Product Design Choices in Primary & Secondary Markets Under Regulation: An LCA Approach
 Gal Raz, Associate Professor, University of Virginia, United States
 Vered Blass, Lecturer, Tel Aviv University, Israel
 Cheryl Druehl, Assistant Professor, George Mason University, United States

This paper examines the effect of product design changes on environmental/social impacts of a firm selling new products in a primary market and refurbished products in a secondary market and shows the consequences of regulations in the primary market on the firm's profits and environmental/social impact in both markets.

- 051-0627** Competitive Industry's Response to Environmental Tax Incentives for Green Technology Adoption
 Anton Ovchinnikov, Assistant Professor, University of Virginia, United States
 Dmitry Krass, Professor, University of Toronto, Canada

We consider how an industry of heterogeneous firms responds to an environmental tax by choosing production quantities and emissions-reducing technologies. We show the existence and uniqueness of the market-only equilibrium (given tech choices) and demonstrate its many counter-intuitive properties. We then discuss the technology-and-market equilibrium.

- 051-1277** Design for Recovery or Obsolescence: The Effect of Take-back Legislation
 Ximin Huang, Student, Georgia Institute of Technology, United States
 Atalay Atasü, Associate Professor, Georgia Institute of Technology, United States
 Beril Toktay, Professor, Georgia Institute of Technology, United States

We consider a monopolist who has two product design options to manage the end-of-life costs/revenues associated with its products: making products more durable or recyclable. We explore how the recyclability and durability choices are affected by the requirements of take-back legislation.

- 051-0279** Optimal Policies for the Diffusion of Renewable Energy Systems
 Shadi Goodarzi, Student, Hec Paris, France
 Sam Aflaki, Assistant Professor, Hec Paris, France
 Andrea Masini, Associate Professor, Hec Paris, France

This paper aims at identifying optimal policies for promoting adoption of Photovoltaic systems. We develop a 3-tier model that includes prospective customers, PV-manufacturer and an electricity retailer responsible for meeting demand, where the regulatory policies determine the price of PV systems and the adoption level. Using a game theoretic framework, we characterize the equilibrium outcomes.

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| 52 | Friday, 10:00 AM - 11:30 AM, International 10 | <i>Track:</i> Humanitarian Operations and Crisis Management |
| | <i>Session:</i> Humanitarian Logistics: Case Studies from Developing Regions | |
| | <i>Chair(s):</i> Dorit Bölsche | |

- 051-0266** Distributing Medical Products in Cameroon - Status Quo and Measures to Rise Logistic Performance
 Axel Schumann, Professor, Technische Hochschule Mittelhessen - University of Applied Sciences, Germany
 Lilliane Streit-Juotsa, , ,

This contribution deals with special challenges in distributing medical products to the people in need in Cameroon: Bottlenecks caused by missing infrastructure (e.g. the seaport or in the hinterland), low logistic performance indicator and high corruption indicator. The actual situation is as well documented as first solutions by case studies.

- 051-0566** Maritime Logistics in Africa: Humanitarian and Development Perspectives
 Michele Acciaro, Assistant Professor, Kuehne Logistics University, Germany
 Maria Besiou, Associate Professor, Kuehne Logistics University, Germany

In some parts of the world, like in Africa, disasters take place quite often. Ports have a very important role in the relief operations. We discuss whether port infrastructure has been adapted to facilitate operations in case of emergency and what role ports play in case of emergencies.

051-1262 Natural Disaster Case Study from the Uttarakhand Region, northern India

Ritu Narang, Assistant Professor, University of Lucknow, India

Kate Hughes, Student, Macquarie University, Australia

India is vulnerable to natural disasters due to its geo-climatic conditions. Recent catastrophic losses resulting from the floods in the Uttarakhand region in May 2013, raised some serious concerns. This case study begins by describing India's disaster management programme and then seeks to explore the reasons behind the devastation.

051-0830 Managing Effective Response of Humanitarian Logistics, Empirical Evidence from Oman

Zainab Al-Balushi, Assistant Professor, Sultan Qaboos University, Oman

Rayya Al-Khalili, Student, Sultan Qaboos University, Oman

Shadha Al-Hashmi, Student, Sultan Qaboos University, Oman

Asma Al-Muqimi, Student, Sultan Qaboos University, Oman

Hama Al-Mamari, Student, Sultan Qaboos University, Oman

This paper investigates the effective response of humanitarian logistics. Mainly pre, during and post disaster response. Empirical evidence is provided from cases studies in Oman. The case studies discuss and critically analyse challenges, impact and strategies adopted to enhance the effective response.

53	Friday, 10:00 AM - 11:30 AM, International B	Track: Humanitarian Operations and Crisis Management
	Session: Research and Knowledge in Humanitarian Logistics	
	Chair(s): Paulo Goncalves	

051-0455 An Overview of Disaster Operations Management and a Research Agenda for Disaster Service Management

Niratcha Tungtisanont, Student, Clemson University, United States

Aleda Roth, Professor, Clemson University, United States

Yann Ferrand, Assistant Professor, Clemson University, United States

This paper offers insights regarding a conceptual typology of disaster events, and derives a research agenda for HO & CM. We focus on Disaster Operations Management (DOM), which is a subfield of HO & CM. Then, we propose a new perspective by looking at DOM through the service management lens.

051-0041 Design of a Performance Measurement System in the Humanitarian Supply Chain

Hella Abidi, Student, FOM Hochschule, Germany

Sander De Leeuw, Associate Professor, Vrije Universiteit Amsterdam, Netherlands

Matthias Klumpp, Professor, FOM Hochschule, Germany

The main purpose of this study is the design and implementation of a performance measurement system in a humanitarian organization to determine the performance of its supply chain and to align the interests of donors, suppliers, beneficiaries and logistics service provider.

051-0442 Supply Chain Optimization of the distribution of mosquito nets in Ivory Coast

Irineu Brito Jr, Student, Universidade De Sao Paulo, Brazil

Silvia Uneddu, Emergency & Field Logistics Manager, Unicef, Denmark

Paulo Goncalves, Associate Professor, University of Lugano, Switzerland

The use of insecticide-treated mosquito nets is one of the most effective ways to reduce malaria deaths. To help plan UNICEF's distribution of 12 million bed-nets in Ivory Coast, we developed a model to optimize the costs from purchasing and prepositioning at Districts level, achieving 7% logistics cost reduction.

051-0685 The Development of a Natural Disaster Training Program in Brazil by Considering the Previous Victim Profile

Carlos De Rosis, Student, Universidade De Sao Paulo, Brazil

Priscilla Carneiro, Student, Universidade De Sao Paulo, Brazil

Irineu Brito Jr, Student, Universidade De Sao Paulo, Brazil

Adriana Leiras, Assistant Professor, Pontifica Universidade Catolica Do Rio De Janeiro- Puc Rio, Brazil

Hugo Yoshizaki, Associate Professor, Universidade De Sao Paulo, Brazil

Disasters have increased in number and intensity which requires the study of previous disasters so decisions can target the main vulnerabilities. This paper aims to assist policies for prevention and mitigation through training programs for disaster preparation in Brazil considering the previous victim profile and a methodology for data collection.

54	Friday, 10:00 AM - 11:30 AM, International C	Track: Supply Chain Risk Management
	Session: Risk Measures and Implications for Supply Chain Decisions	
	Chair(s): Panos Kouvelis Rong Li	

051-0495 Newsvendor Risk Management: The Role of Risk Measurement

Panos Kouvelis, Professor, Washington University St Louis, United States

Rong Li, Associate Professor, Nankai University, China

This paper address an implementation issue of Enterprise-wide Risk Management (ERM) for a newsvendor, who faces volatile demand correlated with the price of a marketable security. We discover good risk measurements, VaR and CVaR constraints, that bring ERM implementation convenience: cross-department (operations and finance) coordination is not required.

051-0846 One Price, Different Profits: An Empirical Study on the Cost of Demand Risk Under Risk Pooling

Jie Ning, Assistant Professor, Case Western Reserve University, United States

Jussi Keppo, Associate Professor, National University of Singapore, Singapore

Romesh Saigal, Professor, University of Michigan Ann Arbor, United States

We develop a model that quantifies the cost of demand risk accounting for risk pooling. Using dataset of an auto-parts supplier, we find that although offering uniform unit price, the supplier still treats the large customers more favorably by absorbing the demand risk, and thus effectively charging a lower price.

051-1324 Inventory Procurement and Financing Decisions

Qi Wu, Assistant Professor, Case Western Reserve University, United States

Sridhar Seshadri, Professor, Indian School of Business, India

Kumar Muthuraman, Associate Professor, University of Texas Austin, United States

In this talk, we present a model of trade credit, embedded in a stochastic inventory control problem. We compute the optimal joint inventory, cash management and trade credit decisions, based on which, we show that trade credit helps with smoothing cash flows and making better operational decisions.

051-0747 Risk-Averse Newsvendor with Deferred Payment under CVaR Criterion

Desheng Wu, Senior Lecturer, University of Toronto, Canada

We employ Conditional Value-at-Risk (CVaR), a risk measure commonly used in finance, as the performance criterion to examine how supply chain performance is affected through the deferred payment from retailers. Analytical results are yielded for the newsvendor retailer's optimal order quantity and supplier's optimal wholesale price under this CVaR criterion.

56	Friday, 01:30 PM - 03:00 PM, A602 <i>Session:</i> Managing demand and supply uncertainties <i>Chair(s):</i> jiho yoon	<i>Track:</i> Purchasing and Supply Management
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051-0019 How to Choose Contingency Tactics for Supply Chain Risks ?

Federico DAmico, Lecturer, Hull Univerisity Business School, United Kingdom

Riccardo Mogre, Lecturer, Hull Univerisity Business School, United Kingdom

Contingency tactics are critical in managing supply chain risks. A new Analytic Network Process model is developed to assist supply chain managers in choosing contingency tactics. The model takes into account the interdependence among risks and among tactics. We illustrate the practical importance of this research through an industrial example.

051-0055 Reliable Supply Chain Network Design

Jiho Yoon, Student, Michigan State University, United States

Hakan Yildiz, Assistant Professor, Michigan State University, United States

Srinivas Talluri, Professor, Michigan State University, United States

This study looks at the strategic supply chain network design problem with two conflicting objectives: minimizing cost and maximizing reliability. Our models attempt to capture the impact of upstream supply chain in quantifying total reliability of a network. We provide results that provide a trade-off between the two objectives.

051-1354 Risk Calibration and Supply Chain Disruption Management

Saurabh Ambulkar, Student, Iowa State University, United States

Jennifer Blackhurst, Associate Professor, Iowa State University, United States

Johnny Rungtusanatham, Professor, Ohio State University, United States

In this project, we seek to understand the effect of risk calibration and risk attitude (risk seeking, averse or neutral) on a manager's preferences for protection against a variety of supply chain disruptions with varying levels of probability and impact.

051-0990 Managing the Unreliable Buyer

Wenli Peng, Student, Universit  Catholique De Louvain, Belgium

Philippe Chevalier, Professor, Universit  Catholique De Louvain, Belgium

In order to plan its operations a firm must often rely on demand forecasts from its buyers. We study the impact of the quality of the forecasts of the buyers on the required working capital of the firm and derive scheduling rules to minimize this required working capital.

57	Friday, 01:30 PM - 03:00 PM, A701 <i>Session:</i> Panel: Future Research in Closed Loop Supply Chains <i>Chair(s):</i> Gal Raz	<i>Track:</i> Closed Loop Supply Chains
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051-0089 Panel on the Future of Close Loop Supply Chain Research

Daniel Guide, Professor, Penn State University University Park, United States

Tamer Boyaci, Associate Professor, McGill University, Canada

Robert Klassen, Professor, University of Western Ontario, Canada

In this panel, leading researchers in the area of Close Loop Supply Chain will share their thoughts about the future of research in the field and which avenues of research seem most promising. The panel will include interactive discussion with the audience on the future directions of CLSC.

59	Friday, 01:30 PM - 03:00 PM, A703 <i>Session:</i> Retail Supply Chain Management <i>Chair(s):</i> Qingning Cao	<i>Track:</i> Retail Operations Management
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051-1120 Allocation of Decision Rights in a Supply Chain

Qingning Cao, Student, Vanderbilt University, United States

Mumin Kurtulus, Assistant Professor, Vanderbilt University, United States

Our paper studies the implications of allocating decision rights (retail assortment, inventory ownership) in a supply chain. In particular, we identify product and market characteristics that lead to a win-win situation for the manufacturer and the retailer, when the retailer consigns her assortment and inventory decisions to the manufacturer.

051-0157 Getting a Second Opinion: Category Advisors

Alper Nakkas, Assistant Professor, Sungkyunkwan University, Korea, Republic of (South Korea)

Category captainship, which is a common category management implementation in the retailing industry, can have a tremendous impact on the retailer's bottom line performance. We consider the biased incentives of category captains and explore the impact of category advisors, who are simply non-captain manufacturers, on the implementation of category captainship.

051-0049 Dynamic Pricing or Dynamic Logistics

Thunyarat (Bam) Amornpetchkul, Student, University of Michigan Ann Arbor, United States

Hyun-soo Ahn, Associate Professor, University of Michigan Ann Arbor, United States

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

A dual-channel retailer may employ either price differentiation or inventory transshipment to balance available inventory and demand arriving at each channel. We characterize and compare the effectiveness of the two mechanisms. Furthermore, we investigate how the optimal pricing policy is affected by the transshipment policy, and vice versa.

051-0638 The Effect of a Temporary Product Distribution Channel on Supply Chain Performance

Moutaz Khouja, Professor, University of North Carolina Charlotte, United States

Jing Zhou, Associate Professor, University of North Carolina at Charlotte, United States

We analyze a supply chain of a manufacturer and two retailers, permanent retailer and intermittent deal-of-the-day (DOTD) retailer. We find that only with a DOTD retailer, it is optimal for the manufacturer to offer quantity discount. We investigate the effect of a DOTD retailer on all parties and consumers.

60	Friday, 01:30 PM - 03:00 PM, A704 Session: Bed Management and Healthcare Networks Chair(s): Denise White	Track: Healthcare Operations Management
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051-1347 A Regional Routing Model for Large Geographic Healthcare Networks

Luke Holt, Student, North Dakota State University, United States

Joseph Szmerekovsky, Professor, North Dakota State University, United States

We study a healthcare distribution network with sequence restrictions and delivery deadlines. It involves a large geographic network spread across five states visiting hospitals, clinics, and long-term care facilities. We present a vehicle routing model that minimizes the system costs associated with vehicle trips when scheduling vehicle routes.

051-1097 Scheduling for a Clinical Network

Dongyang (Ester) Wang, Student, University of Texas at Austin, United States

Douglas Morrice, Professor, University of Texas Austin, United States

Kumar Muthuraman, Associate Professor, University of Texas Austin, United States

An outpatient who needs surgery usually undergoes a preoperative process which requires timely access to multiple services. However, scheduling outpatient appointments is not coordinated among the clinics. We develop a model that centralizes scheduling for a clinical network and our approach has the potential to identify a system-wide optimal solution.

051-0651 Dynamic Systems Applied to Bed Management in a Public Hospital Specialized in Cardiology

João Chang Junior, Associate Professor, Centro Universitario Da Fei, Brazil

Suzana Souza Santos, Professor, Universidade De Sao Paulo, Brazil

Alfredo da Silva Fernandes, Professor, Instituto do Coração do Hospital das Clínicas da USP, Brazil

This work proposes a dynamic bed management model for a public hospital specializing in cardiac surgery, giving greater efficiency in services provided. Suggested activities not only benefit patients, reducing the length of stay and the risk of death, but also reduce the patients queue waiting for an outpatient care or surgery.

051-0601 Smoothing Specialty Unit Bed Utilization through Surgical Scheduling

Denise White, Assistant Professor/Consultant (Capacity Management) - Quality & Transformation Analytics, Cincinnati Children'S Hospital Medical Center, United States

Amy Anneken, Lead Analyst - Quality and Transformation Analytics, Cincinnati Children'S Hospital Medical Center, United States

Constraints and schedules within a hospital system can often result in system variability that produces sub-optimal use of specialized bed capacity. Using simulation optimization, data analytics, and heuristics, we were able to identify surgical scheduling options that improved specialty unit utilization and reduced the daily bed occupancy.

61	Friday, 01:30 PM - 03:00 PM, A705 Session: Hospital Services and Mobile Applications Chair(s): Ken Klassen	Track: Healthcare Operations Management
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051-0365 Use of QFD (Quality Function Deployment) in Mobile Application Design & Development for Perioperative Services

Brandon Lee, Student, Clemson University, United States

Lawrence Fredendall, Professor, Clemson University, United States

Kevin Taaffe, Associate Professor, Clemson University, United States

Joel Greenstein, Associate Professor, Clemson University, United States

Nathan Huynh, Assistant Professor, University of South Carolina, United States

Jose Vidal, Associate Professor, University of South Carolina, United States

Mobile devices and their applications are being adopted at a phenomenal pace for multiple industrial usages including processes in hospitals. This study will examine the effectiveness of Quality Function Deployment as a tool to identify features in mobile applications required by perioperative staff to improve coordination and increase patient throughput.

051-0263 Using Concept Engineering to Develop Mobile Application for Perioperative Staff

Yunsik Choi, Student, Clemson University, United States

Lawrence Fredendall, Professor, Clemson University, United States

Kevin Taaffe, Associate Professor, Clemson University, United States

Joel Greenstein, Associate Professor, Clemson University, United States

Nathan Huynh, Assistant Professor, University of South Carolina, United States

Jose Vidal, Associate Professor, University of South Carolina, United States

Concept engineering was used to identify customers' needs for a mobile application to achieve perioperative staff coordination. Data was gathered by shadowing staff, structured interviews, and a survey. Data was translated into mobile application features via affinity and interaction relationship diagrams to convert important characteristics into customer requirements.

051-1032 Identification of the Difficulties Faced by the Top Management of the Public Hospital Health Waste Management

Ayala Braga, Assistant Professor, Universidade Federal Rural do Rio de Janeiro, Brazil

Angelica Carlson, Student, Universidade Federal Rural do Rio de Janeiro, Brazil

This study aims to analyze the administrative aspects of health waste management service in hospitals. The method was case study. The results showed that the difficulties faced by the top management of public hospitals in the management of RSS are mainly the issue of human resources.

051-0476 Hospital Porter Services: Aligning Resources with Call Volume

Sean Brown, Student, Brock University, Canada
Ken Klassen, Professor, Brock University, Canada

Poorly managed porter services can result in long wait times. A four month performance improvement study in a large hospital demonstrated many weaknesses in system organization, but found that by improving call prioritization, establishing benchmarks, and matching schedules with expected hourly demand, huge improvements are possible.

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Friday, 01:30 PM - 03:00 PM, A706

Track: Healthcare Operations Management

Session: Lean Performance Improvement in Healthcare

Chair(s): David Dobrzykowski

051-1416 Patient Satisfaction through the Experience of Chronically Ill Patients

Jonathan Beebe, Student, Boston University, United States
Susan Fournier, Professor, Boston University, United States

This paper examines "patient satisfaction" as it relates to chronically ill patients, for whom identity shifts and self-management of the condition locate care both within and outside the doctor's office. The paper's findings suggest the critical role of balance, control, and relationships as key characteristics of satisfaction for these patients.

051-0066 Lean and Person-Centred Care: Are they at odds?

Sharon Williams, Lecturer, Cardiff University, United Kingdom

Lean in healthcare continues to be a popular approach to improvement. However, some efforts have not always produced the benefits expected. This has led to closer investigations of the translation of lean to healthcare. As person-centered-care becomes a key focus, this paper explores how lean might contribute to this endeavor.

051-0522 Lean Interventions in Healthcare: Bye-bye Buffers ?

Oskar Roemeling, Student, Rijksuniversiteit Groningen, Netherlands
Martin Land, Associate Professor, University of Groningen, Netherlands

In an in-depth longitudinal case study we explore why a smooth continuous improvement process does not result in the expected reduction of buffers. We use a rich set of intervention data collected over multiple years, investigating literally hundreds of interventions in a hospital setting.

051-0379 Lean and Integration for Safety and Financial Performance in Healthcare

David Dobrzykowski, Assistant Professor, Rutgers University, United States
Kathleen McFadden, Professor, Northern Illinois University, United States
Mark Vonderembse, Professor, University of Toledo, United States

This study informs relationships among lean, integration, patient safety, and financial performance. Data were collected from three sources for acute care hospitals in the USA. Results indicate that a lean orientation has a direct and positive impact on safety while it impacts financial performance indirectly through integration.

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Friday, 01:30 PM - 03:00 PM, A707

Track: Product Innovation and Technology Management

Session: Managing Innovative Projects

Chair(s): Morvarid Rahmani

051-0081 How (and When) to Encourage Cooperation in Project Portfolios?

Fabian Sting, Assistant Professor, Rotterdam School of Management, Netherlands
Pascale Crama, Assistant Professor, Singapore Management University, Singapore
Yaozhong Wu, Associate Professor, National University of Singapore, Singapore

Inspired by an innovative case, we model a project portfolio system that shapes cooperative behavior. Help is at the core of this system in which employees may mutually ask for help, while management facilitates the exchange of help. We find that the company should take a nuanced approach to help.

051-0104 Optimal Search for the Best Alternative: An Experimental Approach

Gulru Ozkan, Assistant Professor, Clemson University, United States
David Hall, Assistant Professor, Wright State University, United States
Jeremy Hutchison-Krupat, Assistant Professor, University of Virginia, United States
Fred Switzer, Professor, Clemson University, United States

Using a behavioral approach, we examine the strategy of decision makers who search for the best alternative to develop into a new product. The impacts of facing a set of radical or incremental set of alternatives and the level of time-pressure on the evolution of decision makers' performances are analyzed.

051-0105 Innovation Tournaments with Multiple Contributors

Laurence Ales, Assistant Professor, Carnegie Mellon University, United States
Soo-Haeng Cho, Assistant Professor, Carnegie Mellon University, United States
Ersin Korpeoglu, Student, Carnegie Mellon University, United States

We study innovation tournaments in which an organizer seeks multiple solutions from agents. Agents exert efforts, but their outcomes are uncertain due to technical uncertainty and subjective taste of the organizer. We derive a condition for a winner-takes-all award scheme, and show the optimal award may not increase with participants.

051-1446 Managing Innovation in a Crowd

Daron Acemoglu, Professor, Massachusetts Institute of Technology, United States
Mohamed Mostagir, Assistant Professor, University of Michigan Ann Arbor, United States
Asuman Ozdaglar, Associate Professor, Massachusetts Institute of Technology, United States

Crowdsourcing is an emerging technology where innovation and production are sourced out to the public through an open call. A central problem in crowdsourcing innovation is that the difficulties of innovation tasks are often unknown in advance, and the skills of crowdsourced labor are unknown as well, so how can we best match tasks to workers when we know neither the difficulties of the tasks nor the skills of the workers? We give an optimal pricing mechanism for tasks that provides an incentive for workers to reveal their skills and that achieves the optimal matching.

64	<p>Friday, 01:30 PM - 03:00 PM, A708 <i>Track:</i> Production Planning and Scheduling</p> <p><i>Session:</i> Insights into production and supply chain flexibility</p> <p><i>Chair(s):</i> Craig Hill</p>
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- 051-0339** A Proposed Measure of Supply Chain Flexibility
 Craig Hill, Associate Professor, Clayton State University, United States
 Robert Burgess, Senior Lecturer, Sscheller College of Business, United States

The authors propose a measure of supply chain flexibility utilizing secondary data sources such as cash-to-cash cycle. Cash-to-cash cycle has been used as a traditional measure of supply chain effectiveness, however, proper use of this measure can predict supply chain flexibility.

- 051-1346** The System Supply and Innovation of Social enterprise: Chinese Experience and Revelation
 Qiangling Wu, Associate Professor, East China University of Science & Tehcnology, China

As one new kind of organization, the social enterprise has been playing very important role in economic and social areas. In this paper, I focus on social enterprises in China, share Chinese experience with other researchers, and analyze the system supply and innovation in developing of social enterprises.

- 051-0431** An Approach to Make Statistical Forecasting of Products with Stationary/Seasonal Patterns
 Carlos Castro-Zuluaga, Associate Professor, Universidad Eafit, Colombia
 Sara Botero-Escobar, Student, Universidad Eafit, Colombia

In this paper we make a proposal of an approach to define the parameter of the exponential smoothing model for products with a behavior pattern stationary or seasonal/stationary in the historical data, to obtain "good forecasting" A numerical example is used to show the effectiveness of the proposed method.

- 051-0708** The Role of Logistics Service Providers Enhancing Supply Chain Flexibility
 Jack Crumbly, Assistant Professor, Tuskegee University, United States

As organizations look for strategies to enhance their supply chains, logistics service providers (LSPs) assist firms through various services that enhances the effectiveness of the supply chain. The research looks at the current state of LSPs, opportunities for LSPs to enhance services and research opportunities.

66	<p>Friday, 01:30 PM - 03:00 PM, M101 <i>Track:</i> General Track</p> <p><i>Session:</i> Tutorial and Panel Discussion: Not for Profit Operations Management</p> <p><i>Chair(s):</i> Gemma Berenguer George Shanthikumar</p>
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- 051-1450** Tutorial and Panel Discussion - Not for Profit Operations Management
 Gemma Berenguer, Assistant Professor, Purdue University, United States
 Pinar Keskinocak, Professor, Georgia Institute of Technology, United States
 George Shanthikumar, Professor, Purdue University, United States
 Jayashankar Swaminathan, Professor, University of North Carolina, United States
 Luk Van Wassenhove, Professor, INSEAD, France

We will start this session with a tutorial lead by Professor Jay Swaminathan on global health. This talk will highlight the key challenges in global health operations and will focus on similarities and differences in the operations as compared to those of commercial firms. Next, three panelists will present their work related to other applied areas of research where nonprofit activities are common. A final discussion will debate whether Not for Profit Operations Management can be defined as a new stream of OM research, what are its distinctive features and what are the most promising future research directions.

67	<p>Friday, 01:30 PM - 03:00 PM, M102 <i>Track:</i> Inventory Management</p> <p><i>Session:</i> Empirical Research on Inventory</p> <p><i>Chair(s):</i> Saravanan Kesavan</p>
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- 051-0344** Cross-functional Product Management Decisions: Inventory, Selling Incentives, Advertising on Sales
 Sriram Narayanan, Assistant Professor, Michigan State University, United States
 Shrihari Sridhar, Assistant Professor, Penn State University State College, United States
 Raji Srinivasan, Professor, University of Texas Austin, United States

Using data from the automotive industry, we develop a model relating a firm's inventory holding, advertising and selling incentive spending to one another and product sales. Using the model, we develop insights on responsive cross functional coordination and its implications in managing product sales.

- 051-0443** Determinants of Excess Inventory Announcements: Luck or Ability?
 Hyun Seok Lee, Student, University of North Carolina Chapel Hill, United States
 Saravanan Kesavan, Assistant Professor, University of North Carolina Chapel Hill, United States

We first analyze what determines excess inventory announcements in the retail sector: luck or ability. Then we turn to the next question whether market reacts differently to two distinct drivers of excess inventory. Moreover, we also investigate the different impact of giving a reason of excess inventory in the announcement.

- 051-1099** The Impact of Supplier Reliability on Retailer Demand
 Nathan Craig, Student, Harvard University, United States
 Nicole DeHoratius, Professor, University of Chicago, United States
 Ananth Raman, Professor, Harvard University, United States

To set inventory service levels, suppliers must understand how changes in service level affect retailer demand. Using data from a supplier of branded apparel, we show increases in service level to be associated with statistically and economically significant increases in orders from retailers.

- 051-1270** Inventory Decisions Under Information Asymmetry
 William Schmidt, Assistant Professor, Cornell University, United States
 Ryan Buell, Professor, Harvard University, United States

We examine capacity choices under information asymmetry and find that decision makers more often make choices consistent with Pareto optimization logic. This has material implications for both research and practice as it yields dramatically divergent predictions compared to more commonly modeled alternatives.

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| 68 | Friday, 01:30 PM - 03:00 PM, M103 | <i>Track:</i> Manufacturing Operations |
| | <i>Session:</i> Special topics in Operations Management | |
| | <i>Chair(s):</i> Annie Chen | |

- 051-0954** Supply Chain Management through Cascading
 Georg Schorpp, Student, Stanford University, United States
 Hau Lee, Professor, Stanford University, United States
 Feryal Erhun, Assistant Professor, Stanford University, United States

We consider a two-player supply chain where disruptions of random length can occur at the supplier. Both the buyer and the supplier have access to individual emergency sources and can reserve extra capacity. We investigate the inefficiency gap and the conditions under which the supply chain can be aligned.

- 051-1028** Sparse-Inbound Transportation Problem
 Annie Chen, Student, Massachusetts Institute of Technology, United States
 Stephen Graves, Professor, Massachusetts Institute of Technology, United States

We study a large-scale transportation problem with an additional constraint on the sparsity of inbound flows, which arise in online retail inventory management, where each item is stocked in a limited number of warehouses to reduce operational overhead. We propose, analyze, and test a computationally efficient algorithm solving this problem.

- 051-0412** Regression-Based Metamodeling in Estimation of Cycle Time Quantiles in Semiconductor Manufacturing Industry
 Demet Batur, Assistant Professor, University of Nebraska Lincoln, United States
 Jennifer Bekki, Assistant Professor, Arizona State University Tempe, United States

In semiconductor manufacturing systems, cycle time quantiles are critical drivers in determining delivery dates. Simulation models of these systems require excessive computation time. Metamodels of simulation models can be easily evaluated in a spreadsheet environment under changing operating conditions. We present a regression-based metamodeling approach to estimate cycle time quantiles.

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| 69 | Friday, 01:30 PM - 03:00 PM, M104 | <i>Track:</i> Marketing and OM Interface |
| | <i>Session:</i> Supply Chain Contracting and Retail Operations | |
| | <i>Chair(s):</i> Gang Wang | |

- 051-0325** Sponsored Search Marketing: Dynamic Pricing and Advertising for an Online Retailer
 Shengqi Ye, Student, Indiana University Bloomington, United States
 Goker Aydin, Associate Professor, Indiana University, United States
 Shanshan Hu, Assistant Professor, Indiana University Bloomington, United States

We investigate an online retailer's dual use of sponsored search marketing and dynamic pricing. The interactions between bidding and pricing decisions lead to interesting structures of the optimal policy. For instance, the optimal price might increase as the end of the selling season approaches (for a fixed level of inventory).

- 051-0518** Procurement Contracting under Product Recall Risk
 Gang Wang, Student, University of North Carolina Chapel Hill, United States
 Lauren Xiaoyuan Lu, Assistant Professor, University of North Carolina Chapel Hill, United States
 Jayashankar Swaminathan, Professor, University of North Carolina Chapel Hill, United States

Product recall is commonly observed in various industries with production outsourcing. Managing product quality and mitigating the financial impact of product recalls pose great challenges to manufacturers due to demand uncertainty and non-contractibility of suppliers' quality effort. We develop a procurement contractual framework under both demand and recall risks.

- 051-1276** Coordination of a Two-Level Supply Chain with Multiple Shipments: Inventory Subsidizing Contracts
 Shi Chen, Assistant Professor, Foster School of Business, University of Washington, United States
 Hau Lee, Professor, Stanford University, United States
 Kamran Moynzadeh, Professor, University of Washington, United States

We consider a supply chain where a retailer orders multiple shipments during a season. Incentive misalignment arises from inventory cost differential and the intricacy of inventory allocation. We derive the optimal inventory subsidizing scheme. We also show that supply chain efficiency can be significantly improved if multi-shipment is allowed.

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| 71 | Friday, 01:30 PM - 03:00 PM, International 2 | <i>Track:</i> General Track |
| | <i>Session:</i> Teaching and Positioning the Core OM Course (Part I) | |
| | <i>Chair(s):</i> Joel Goldhar | |

- 051-1457** Purpose and 'Positioning' of the Core Operations Management Course
 Joel Goldhar, Professor, Illinois Institute of Technology, United States
 Arthur Hill, Professor, University of Minnesota, United States

This session will concentrate on the role/purpose of the OM Core Course in the MBA or Undergraduate Curriculum. Discussion to include: Learning Objectives, Key Topics, 'Big Ideas', and Critical Tools and Concepts? Appropriate balance between 'OR' tools/optimization and Organization Behavior/management skills? How should the course be structured and the ideas/topics sequenced? What does not belong? To what extent should OM be an 'Integrative' course? How has the OM Core Course changed over the past 10 years and where should it go in the future? ALL ATTENDEES ARE ENCOURAGED TO BRING THEIR OWN EXPERIENCES AND TO ACTIVELY PARTICIPATE IN THE DISCUSSION.

72	<p>Friday, 01:30 PM - 03:00 PM, International 3</p> <p>Session: Internal Logistics Processes</p> <p>Chair(s): Jaydeep Balakrishnan</p>	<p>Track: Scheduling and Logistics</p>
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- 051-0302** Proactive and Reactive Procedures in Constrained Dynamic Layout
- Jaydeep Balakrishnan, Professor, University of Calgary, Canada
 Chun-Hung Cheng, Associate Professor, Chinese Univ of Hong Kong, Hong Kong
 Chun Ming Lau, Student, Chinese Univ of Hong Kong, China

The constrained dynamic plant layout problem (CDPLP) deals with multi-period layout plans under budget restrictions. Genetic algorithms (GA) have proved to be effective in solving CDPLPs. We suggest proactive and reactive heuristics to improve GA for the constrained situation. A computational study is carried out to compare the proposed heuristics.

- 051-0093** Internal Movement of Materials Outsourcing Reversal: A Case Study in a Tire Manufacturing Company
- Bruno Durães, Student, Universidade Nove de Julho, Brazil
 Rosangela Vanalle, Professor, Universidade Nove De Julho, Brazil
 José Salles, Professor, Universidade Nove De Julho, Brazil

This article describes the potential advantages and disadvantages of outsourcing the internal movement of materials, identifies the reasons of a manufacturer of tires to reverse its internal services movement with the use of industrial vehicles, and presents the results from the reversal of this process.

- 051-1378** Development of Real Time Integrated Monitor' System for the Improvement of Offshore Structure Block Logistics
- Byeongyeol Lee, Head Researcher, HHI, Korea, Republic of (South Korea)

How to efficiently manage offshore structure blocks at offshore yard has been a hot management issue in the offshore engineering industry. this paper introduces the real time monitoring system for structure block logistics in Hyundai Heavy Industries(HHI).

- 051-1100** International Air Medical Transport Network Design
- Wei Chen, Student, University of Pittsburg, United States
 Jennifer Shang, Professor, University of Pittsburg, United States

Given current international health care demand unbalance situation and considering all air medical transport's characteristics, this research designs a global network structure for an air medical transport firm. The objective of the research is to maximize firm's global service coverage using as least resources as possible.

73	<p>Friday, 01:30 PM - 03:00 PM, International 4</p> <p>Session: JOINT session BOM and HOCM - Behavioral Operations in Context: Humanitarian and Urban</p> <p>Chair(s): Erica Gralla</p>	<p>Track: Behavior in Operations Management</p>
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- 051-0206** Problem Formulation and Solution in Humanitarian Logistics: A Behavioral Study
- Erica Gralla, Assistant Professor, George Washington University, United States
 Jarrod Goentzel, Lecturer, Massachusetts Institute of Technology, United States
 Charles Fine, Professor, Massachusetts Institute of Technology, United States

In many operational settings, human decision-makers struggle not only to make good decisions but also to understand the nature, or formulation, of the decision itself. We study ten teams of expert humanitarian logisticians, to show the mechanisms by which humans formulate problems, and discuss their impact on solution quality.

- 051-0433** Goods Deliveries to Retail Businesses in Urban Cities
- YinJin Lee, Student, Massachusetts Institute of Technology, United States
 Edgar Blanco, Professor, Massachusetts Institute of Technology, United States
 Christopher Zegras, Associate Professor, Massachusetts Institute of Technology, United States

Retail shop establishments of all scales and sizes replenish their products through different supply chain structures. Their replenishment strategies influence the frequency of goods deliveries which in turn affect freight transportation needs. A pilot study in Singapore for urban freight model would demonstrate how data collected from survey with retail shops and observations at loading and unloading docks would reveal how frequently and the time-of-day goods are delivered to retailers in the city.

- 051-0738** Multi-Preposition Decisions under Resource Constraints
- Jaime Castaneda, Student, Università della Svizzera italiana (USI, Lugano), Switzerland
 Paulo Goncalves, Associate Professor, Università della Svizzera italiana (USI, Lugano), Switzerland
 Jarrod Goentzel, Lecturer, Massachusetts Institute of Technology, United States

We study a Newsstand (multi-item Newsvendor) setting under resource constraints in the context of preposition decisions. We explore how individuals react to different resource levels when they preposition multiple emergency supplies that differ in their cost levels, assessing thus how constrained resources affect preposition decisions

- 051-1006** The Effect of Expectation to Normality in Willingness to Pay for Critical Supplies
- Jose Holguin-Veras, Professor, Rensselaer Polytechnic Institute, United States
 Felipe Aros-Vera, Student, Rensselaer Polytechnic Institute, United States
 Johanna Amaya, Student, Rensselaer Polytechnic Institute, United States
 Miguel Jaller, Student, Rensselaer Polytechnic Institute, United States

This paper presents estimates of the effect of expectation to normality as a key component of the structure of deprivation costs after disasters. The new set of models combines the structure of the family and the social characteristics of the respondents in a stated preference study conducted.

74	Friday, 01:30 PM - 03:00 PM, International 5 <i>Session:</i> Bargaining in Supply Chains <i>Chair(s):</i> Lauren Xiaoyuan Lu	<i>Track:</i> Supply Chain Contracting
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051-0269 Walking in My Shoes: How Expectations of Role Reversals in Future Negotiations Impact Present Behaviors?

Haresh Gurnani, Professor, University of Miami, United States
 Mahesh Nagarajan, Associate Professor, University of British Columbia, Canada
 Rajesh Bagchi, Associate Professor, Virginia Tech, United States
 Nevena Koukova, Associate Professor, Lehigh University, United States
 Shweta Oza, Assistant Professor, University of Miami, United States

We focus on repeated distributive negotiations to investigate how expectations of role reversals in future affects current behavior. We find that when negotiators expect role reversal they are more likely to make concessions. Implications arise both in managerial as well as in consumer contexts.

051-0355 Revenue Management with Bargaining

Qi Feng, Associate Professor, Purdue University, United States
 George Shanthikumar, Professor, Purdue University, United States

We study the role of bargaining in a firm's revenue management. A unique feature of our model is the linkage between the seller's disagreement point from a trade and her future value of the product, which differentiates our study from previous ones as well as imposing analytical challenges.

051-0489 Dynamic Bargaining in a Supply Chain with Asymmetric Demand Information

Qi Feng, Associate Professor, Purdue University, United States
 Guoming Lai, Assistant Professor, University of Texas Austin, United States
 Lauren Xiaoyuan Lu, Assistant Professor, University of North Carolina Chapel Hill, United States

We analyze a dynamic bargaining game in which a seller and a buyer negotiate over quantity and payment to trade for a product with stochastic demand. The firms make alternating offers until an agreement is reached. The buyer is privately informed about his demand type.

051-0958 The Impact of Outsourcing on Product Design Quality

Jie Gao, Associate Professor, Xi'an Jiaotong University, China
 Gangshu Cai, Associate Professor, Santa Clara University, United States
 Andy Tsay, Associate Professor, Santa Clara University, United States

This paper investigates the conditions under which the competitive firms will outsource to original equipment manufacturers and examine the impacts of outsourcing on product design quality.

75	Friday, 01:30 PM - 03:00 PM, International 6 <i>Session:</i> Empirical Research in Service Operations <i>Chair(s):</i> Jose Guajardo	<i>Track:</i> Service Operations
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051-1203 Impact of Waiting Time on Patient Flow: An Econometric Analysis of Outpatient Clinics

Diwas Kc, Assistant Professor, Emory University, United States
 Nikolay Osadchiy, Assistant Professor, Emory University, United States

We examine patient scheduling at an outpatient clinic and find that capacity affects throughput in two ways - by reducing the likelihood that a patient books an appointment, and by reducing the likelihood that a patient shows up for a scheduled appointment. We also explore the impact of capacity increase.

051-1280 Hand-offs and End-of-shift Effects in the Emergency Department

Bob Batt, Assistant Professor, University of Wisconsin Madison, United States

We examine what factors impact the probability of a patient being handed-off to a new doctor at the end of a shift versus being dispositioned by the current doctor. We also look at the effect of hand-offs on operational variables such as length of stay and revisit rate.

051-0487 Learning from Operational Failures: Evidence from the Service Industries

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

We examine the phenomenon of learning from operational failures at an industry level. Drawing on the multisource multiyear data on failures in the service industries, we find the rate of learning is higher in industries when there is heterogeneity in past failures.

051-0465 Third Party Ownership in the U.S. Solar Energy Market

Jose Guajardo, Assistant Professor, University of California Berkeley, United States

Third party ownership has become a prevalent trend in the U.S. solar energy market, giving origin to new business models. I analyze the drivers and effects of this trend in the context of industry incentives, supply chain structure and market outcomes

76	Friday, 01:30 PM - 03:00 PM, International 7 <i>Session:</i> Empirical Supply Chain Management <i>Chair(s):</i> Robert Bray	<i>Track:</i> Supply Chain Management
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051-0937 On Inventories and the Bullwhip: A Chicken and Egg Situation

Maximiliano Udenio, Student, Technische Universiteit Eindhoven, Netherlands
 Vishal Gaur, Professor, Cornell University, United States
 Jan Fransoo, Professor, Eindhoven University of Technology, Netherlands

We explore the role of inventories in the bullwhip effect. Through an empirical study of firm-level data, we investigate whether inventory-related decisions exacerbate or smoothen the distortions commonly associated with the bullwhip effect.

051-1104 Systematic Risk in Supply Chain Networks

Nikolay Osadchiy, Assistant Professor, Emory University, United States
Vishal Gaur, Professor, Cornell University, United States
Sridhar Seshadri, Professor, Indian School of Business, India

The demand uncertainty faced by a firm can be caused by idiosyncratic factors or systematic economic factors. We investigate how systematic risk propagates through supply chain networks using industry-level data for the manufacturing, wholesale trade, and retail trade sectors of the U.S. economy, and discuss implications for supply chain management.

051-1288 Item Level Evidence of the Bullwhip Effect: Measurement, Aggregation, and Driving Factors

Yongrui Duan, Associate Professor, Tongji University, China
Yuliang Yao, Associate Professor, Lehigh University, United States
Jiazhen Huo, Professor, Tongji University, China

Using an item-level panel dataset, we estimate the existence and magnitude of the bullwhip effect, analyze measurement and aggregation of the bullwhip effect, and examine a number of supply chain related driving factors of the bullwhip effect.

051-1350 Root Causes of Product Expiration in Retail Supply Chains

Arzum Akkas, Student, Massachusetts Institute of Technology, United States
Vishal Gaur, Professor, Cornell University, United States
David Simchi-Levi, Professor, Massachusetts Institute of Technology, United States

This study examines the root causes of product expiration at retail stores in the consumer packaged goods industry. We use zero-inflated negative binomial regression for our analysis based on a manufacturer's proprietary data. We found that case sizes, a product design attribute, are the most significant contributor to product expiration.

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Friday, 01:30 PM - 03:00 PM, International 8

Track: Supply Chain Management

Session: Supply Chain Economics and Pricing

Chair(s): Renato de Matta

051-0589 Product Costing in the Strategic Formation of a Supply Chain (SC)

Renato de Matta, Associate Professor, University of Iowa, United States

We study direct costing (DC)'s and full absorption costing (FAC)'s influence on the strategic formation of a SC network. We formulate network models and solve them with Benders decomposition. Results on the effects on SC profits of supply disruptions and market competition when using DC and FAC are presented.

051-0658 Supply Chain Finance and the Role of Organizational Readiness

David Wuttke, Student, Ebs Business School, Germany
Constantin Blome, Professor, Universit   Catholique De Louvain, Belgium
Hans S Heese, Associate Professor, Indiana University, United States
Margarita Protopappa-Sieke, Assistant Professor, University of Cologne, Germany

If supply chain finance is as good as its advocates claim, why do so few firms use it? Using a diffusion model to capture the organizational readiness of suppliers, we find that only large, influential buyers with good credit ratings benefit from early adoption of supply chain finance. Other firms should wait.

051-0677 Weathering the Storm - A Study of Dealing with Economic Downturn

Sriram Narayanan, Assistant Professor, Michigan State University, United States
Tobias Schoenherr, Assistant Professor, Michigan State University, United States
Steve Melnyk, Professor, Michigan State University, United States

The recent economic downturn has had a major impact on many small suppliers. This presentation draws on a combination of detailed case studies and archival data to identify the various strategies used to deal with these economic changes and to evaluate the effectiveness of these strategies.

051-0539 Beneficial Transaction Costs in an Industrial Network

Otti Kettunen, Research Scientist, Vtt Technical Research Centre of Finland, Finland
Kai H  kkinen, Senior Research Scientist, Vtt Technical Research Centre of Finland, Finland

In this paper a new approach to transaction costs in industrial networks is taken with a literature review and a case study. The research question is what kind of transaction costs are beneficial and contribute to improving the relationships.

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Friday, 01:30 PM - 03:00 PM, International 9

Track: Sustainable Operations

Session: Electricity Markets and Renewable Energy

Chair(s): Saed Alizamir

051-0204 The Structural Impact of Renewable Portfolio Standards and Feed-in-Tariffs on Electricity Markets

Ingmar Ritzenhofen, Student, Whu - Otto Beisheim School of Management, Germany
John Birge, Professor, University of Chicago, United States
Stefan Spinler, Professor, Whu - Otto Beisheim School of Management, Germany

Renewable portfolio standards and feed-in-tariffs are widely used policy instruments to promote investments in renewable energy sources. Regulators continuously assess these instruments along the main electricity policy objectives - affordability, reliability and sustainability of electricity supply. We quantitatively compare these policies along these dimensions using a long-term electricity capacity expansion.

051-1279 Demand Reponse in Electricity Markets: Involuntary vs Voluntary Curtailment Contracts

Kaitlin Daniels, Student, University of Pennsylvania, United States

Ruben Lobel, Assistant Professor, University of Pennsylvania, United States

Curtailment contracts allow forgone energy consumption to be sold on the market during peak demand events. These contracts either require ex ante curtailment commitments from consumers (involuntary) or allow consumers to decide their curtailment level during the peak event (voluntary). We study the relative performance of these two contract types.

051-0052 Impact of Electricity Pricing Policy on the Investment of Renewable Energy

Gurhan Kok, Associate Professor, Duke University Durham, United States
 Kevin Shang, Associate Professor, Duke University Durham, United States
 Safak Yucel, Student, Duke University Durham, United States

We study the effect of time-based pricing policies on renewable energy investment. In contrast with the expectations of policy makers, we show that flat (time-invariant) pricing policy leads to higher level of renewable energy investment for utility firms and independent power producers.

051-1349 Efficient Feed-In-Tariff Policies for Renewable Energy Technologies

Saed Alizamir, Assistant Professor, Yale University, United States
 Francis De Vericourt, Associate Professor, INSEAD, France
 Peng Sun, Associate Professor, Duke University Durham, United States

This paper provides insights and guidance into designing cost-efficient and socially-optimal Feed-In-Tariff programs. By proposing a dynamic optimization modeling framework that captures key network externalities in technology diffusion path, we draw conclusions on the structure of the optimal FIT policies and compare it against the current practice of FIT-implementing jurisdictions.

79	Friday, 01:30 PM - 03:00 PM, International 10	<i>Track:</i> Humanitarian Operations and Crisis Management
	<i>Session:</i> Innovations on Post-Disaster Humanitarian Logistics	
	<i>Chair(s):</i> Jose Holguin-Veras Miguel Jaller	

051-1183 Access Restoration for Post-Disaster Humanitarian Logistics

Felipe Aros-Vera, Student, Rensselaer Polytechnic Institute, United States
 Jose Holguin-Veras, Professor, Rensselaer Polytechnic Institute, United States

This paper develops a mathematical model to help first responders prioritize the restoration of access after a catastrophe, which is critical for Search-and-Rescue and Post-Disaster Humanitarian Logistics. Funded on logistics and welfare economic principles, the model captures the main features that disaster responders face, including human suffering.

051-1254 Discrete Choice Approximation to Deprivation Costs

Victor Cantillo, Associate Professor, Universidad del Norte, Colombia
 Jose Holguin-Veras, Professor, Rensselaer Polytechnic Institute, United States
 Johanna Amaya, Student, Rensselaer Polytechnic Institute, United States

This paper presents a new approximation of deprivation cost functions based on discrete choice models. The models are used to evaluate the willingness of population to pay for water consumption in post-disaster situations, using stated preference scenarios. The study was conducted in Colombia including respondents from impacted and non-impacted areas.

051-1256 Unsolicited Donations after Disasters

Miguel Jaller, Student, Rensselaer Polytechnic Institute, United States
 Johanna Amaya, Student, Rensselaer Polytechnic Institute, United States
 Jose Holguin-Veras, Professor, Rensselaer Polytechnic Institute, United States

This paper introduces policies to reduce the logistics impacts of unsolicited donations after disasters. These measures are based on empirical evidence about unsolicited donations collected in recent disaster and catastrophic events. Econometric models were used to estimate the type and quantity of donations sent after a hypothetical large disaster.

051-1198 Measuring Humanitarian Response Capacity

Jason Acimovic, Assistant Professor, Penn State University State College, United States
 Jarrod Goentzel, Lecturer, Massachusetts Institute of Technology, United States

Humanitarian aid organizations may manage several supply depots around the world used to help respond to disasters. They must decide how much to store and how to distribute inventory. We develop a metric that measures the capacity to respond to a disaster, and the quality of the inventory distribution.

80	Friday, 01:30 PM - 03:00 PM, International B	<i>Track:</i> Humanitarian Operations and Crisis Management
	<i>Session:</i> Resource Allocation, Planning and Recovery	
	<i>Chair(s):</i> Nezih Altay	

051-0689 Optimized Resource Allocation for Utility Network Recovery Planning

Ahmed Ghoniem, Assistant Professor, University of Massachusetts Amherst, United States
 Agha Ali, Professor, University of Massachusetts Amherst, United States
 Kent McCarthy, Engineering Project Leader, Idaho Power, United States
 Shenghan Xu, Assistant Professor, University of Idaho, United States

Resource planning is critical for the recovery of utility networks from natural disasters. We use optimization methodology for the allocation and scheduling of skilled manpower, repair equipment, and replacement parts at Idaho Power using two important objectives, namely the total recovery time and expedient restoration of critical sections.

051-0891 A Queuing Framework for Resource Allocation Following a Disaster Event

Emmett Lodree, Associate Professor, University of Alabama Tuscaloosa, United States
 Sharif Melouk, Assistant Professor, University of Alabama Tuscaloosa, United States
 Jack Crumbly, Assistant Professor, Tuskegee University, United States
 Nezih Altay, Associate Professor, DePaul University, United States

Humanitarian aid servers such as field hospitals cannot start serving customers before all their resources become available. In the meantime, victims arrive to the system and wait for service. Through simulation, we investigate a queuing system for humanitarian relief where resources arrive sporadically and require setup before customers are served.

051-0416 Development of the Humanitarian Supply Chain: From Agile and Push-Pull Boundary Perspective

Yasutaka Kainuma, Associate Professor, Tokyo Metropolitan University, Japan

Yacob Khojasteh, Associate Professor, Sophia University, Japan

Kamrul Ahsan, Senior Lecturer, Victoria University, Australia

We built the humanitarian supply chain optimization model which was featured on agility of relief supplies and setting of push-pull boundary of supply chain network. The optimality of minimization for unsatisfied demand of refugee was confirmed by means of the numerical examples.

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Friday, 01:30 PM - 03:00 PM, International C

Track: Supply Chain Risk Management

Session: Commodity Price Risks and Investment in Supply Chains

Chair(s): Suzanne de Treville

051-1217 An Investment Decision Model for Supply Chain Security and Efficiency

Junjian Wu, Student, Southeast University, China

Haiyan Wang, Professor, Southeast University, China

The paper researches the impact of information technology investment on security and efficiency of a supply chain which includes a manufacturer and a retailer. We build an investment decision model to analyze the problem. Then, an optimal investment policy is found for each player in the supply chain.

051-1244 Cold Chain Investment Model for Perishable Food Supply Chain with Consumers' Preference

Wang Min, Student, Southeast University, China

Lindu Zhao, Professor, Southeast University, China

This paper studies cold chain investment model for perishable food supply chain with consumers' preference. The objective is to determine the optimal cold chain investment to maximize profit and reduce spoilage. The solution procedure and optimal solution are presented. Numerical examples and sensitivity analysis are stated to give suggestions.

051-0483 The Value of Reducing Lead Time Under Non-Stationary Demand

Isik Bicer, Student, University of Lausanne, Switzerland

Suzanne de Treville, Professor, Universite De Lausanne, Switzerland

Verena Hagspiel, Associate Professor, Norwegian University of Science and Technology, Norway

We investigate the cost of exposure to the risk of a sudden change in demand. We first consider the risk of complete and permanent loss of demand, and then consider a more general jump-diffusion model. We use Edgeworth series to analyze the effects of jumps on the mismatch cost.

83	<p>Friday, 03:30 PM - 05:00 PM, A602 <i>Track: OM Practice</i></p> <p>Session: POMS Applied Research Challenge: Final Presentations</p> <p>Chair(s): Felipe Caro</p>
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051-1432 Inventory Showrooms and Customer Migration in Omni-Channel Retail: The Effect of Product Information

David Bell, Professor, The Wharton School, United States
 Santiago Gallino, Assistant Professor, Tuck School of Business, United States
 Antonio Moreno-Garcia, Assistant Professor, Northwestern University, United States

Omni-channel environments where customers can shop online and offline at the same retailer has important implications for customer demand and operational issues. Using data on display showroom introductions by WarbyParker.com we show that, given the opportunity, customers self-select into channels based on their need for visceral product information.

051-1426 How Company-Specific Production Systems Affect Plant Performance: The S-Curve Theory

Torbjørn Netland, Assistant Professor, NTNU, Norway
 Kasra Ferdows, Professor, Georgetown University, United States

Using empirical data collected by visiting 40 plants of Volvo Group on five continents, interviewing 200 managers, administering a questionnaire survey with 312 responses, and accessing a 5-year internal audit, we find that implementation of a corporate lean program improves a plant's performance in an S-shaped pattern.

051-1434 Risk, Process Maturity, and Project Performance: An Empirical Analysis of US Federal Technology Projects

Anant Mishra, Assistant Professor, George Mason University, United States
 Sidhartha Das, Associate Professor, George Mason University, United States
 James Murray, Director, Lockheed Martin, United States

Our study investigates whether process maturity, assessed using the CMMI framework, mitigates the performance impact of risks in Federal Government technology projects. Our results highlight the significant economic implications of process maturity on the risk-project performance relationship, demonstrating the savings (and overruns) in project costs across different project risk levels.

84	<p>Friday, 03:30 PM - 05:00 PM, A701 <i>Track: Closed Loop Supply Chains</i></p> <p>Session: Emerging issues in closed-loop supply chains</p> <p>Chair(s): Eda Kemahlioglu-Ziya</p>
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051-0330 The Implications of Extended Warranties on a Closed-Loop Supply Chain

Wayne Fu, Student, Georgia Institute of Technology, United States
 Atalay Atasü, Associate Professor, Georgia Institute of Technology, United States

We establish a stylized model that accounts for the effects of warranties, endogenizes the allocation strategies of manufacturers, and demonstrates the impact of extended warranties on product pricing, product-line choices, and profitability. We also highlight the relationship between extended warranties and product-line choices in a closed-loop supply chain.

051-0398 Efficient Distribution of Medical Surpluses Using PUSH/PULL Techniques

Wee Meng Yeo, Lecturer, Georgia Institute of Technology, United States
 Atalay Atasü, Associate Professor, Georgia Institute of Technology, United States
 Beril Toktay, Professor, Georgia Institute of Technology, United States

The practice of pushing out inventory information by MedShare is modeled as a simultaneous-move game where recipients either order or wait. Conditions for waiting to be NE are provided. An alternative framework where status is hidden and actual needs are elicited from recipient is analysed. We compare these two strategies.

051-1229 Dismantle or Remanufacture?

Shanshan GUO, Student, Indiana University Bloomington, United States
 Goker Aydin, Associate Professor, Indiana University, United States
 Gilvan Souza, Associate Professor, Indiana University, United States

We study a firm's disposition decision for returned end-of-use products, which can either be remanufactured and sold, or dismantled into parts that can be reused. We formulate this problem as a multi-period stochastic dynamic program, and find the structure of the optimal policy, which consists of monotonic switching curves.

051-1342 Product Reuse in Industries with Radical Innovations

Tamer Boyaci, Professor, McGill University, Canada
 Vedat Verter, Professor, McGill University, Canada
 Mathijn Helmrich, Student, McGill University, Canada

We investigate optimal product reusability (design) and actual reuse decisions in an industry that faces potential radical innovations in addition to sustaining incremental innovations. We utilize a MDP approach to model firm's product introductions over time and identify key factors that can lead to higher reuse and product reusability.

85	<p>Friday, 03:30 PM - 05:00 PM, A702 <i>Track: Empirical Research in Operations Management</i></p> <p>Session: Empirical Research in Operations (II)</p> <p>Chair(s): Anupam Agrawal</p>
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051-0255 Organizing for Long-Term Improvement in Quality

Anupam Agrawal, Assistant Professor, University of Illinois Urbana-Champaign, United States

A firm's organizational structure can impact its supply chain relationships by influencing the process of knowledge creation and use with the suppliers, resulting in enhanced quality performance. We discuss results of a novel natural experiment.

051-0546 Determinants of Supply Chain Greening

Karthik Murali, Student, University of Illinois Urbana-Champaign, United States

Anupam Agrawal, Assistant Professor, University of Illinois Urbana-Champaign, United States

We address the roles of consumer preferences, supply chain structures, autonomous and induced learning, and the threat of regulation on the phenomenon of supply chain greening through a static analytical model and relate our findings to observations of sustainability related practices at firms as different as Walmart and Patagonia.

051-0587 Complex Technological Capability Development for Health Care Delivery: Multi-year Study of Surgical Robots.

Ujjal Mukherjee, Student, University of Minnesota, United States

Shoubhik Sinha, Student, College of Science and Engineering, United States

Scott Bosch, Biomedical Engineering, Park Nicolett Methodist Hospital, Twin Cities, MN, United States

Kingshuk Sinha, Professor, University of Minnesota, United States

We investigate the efficiency/effectiveness of usage of a surgical robot in a multi-specialty hospital. The key research questions addressed in this study are: (i) What is the nature of doctor and surgical team learning with robotic-assisted surgery? and (ii) How does doctor and surgical team learning impact usage rate?

051-0249 Perceived Risks, Opportunities, and Voluntary Adoption of Carbon Abatement Practices

Maria Montes-Sancho, Associate Professor, University of Carlos III Madrid, Spain

Chien-Ming Chen, Assistant Professor, Nanyang Technological University, Singapore

Companies' perceptions about environmental issues shape the corporate choice of adopting a voluntary environmental strategy. This study aims to refine this link by decoupling the perceptions in two dimensions: risks vs. opportunities, and internal processes vs. market-oriented components. We use recent disclosure data to test our hypotheses.

86	Friday, 03:30 PM - 05:00 PM, A703	<i>Track:</i> Retail Operations Management
	<i>Session:</i> Retail Operations	
	<i>Chair(s):</i> Aydin Alptekinoglu	

051-1007 An Analysis of Product Return Episodes

Aydin Alptekinoglu, Associate Professor, Penn State University State College, United States

Paul Messinger, Associate Professor, University of Alberta, Canada

Michele Samorani, Assistant Professor, University of Alberta, Canada

A product return episode is a sequence of transactions composed of the purchase of a product, a return of that product, a repurchase of a similar product, etc, concluding with a final purchase or return. We empirically study return episodes on the data set of a large consumer electronics retailer.

051-0621 Disclosing Low Stock Levels and Offering Generous Refunds: Compliments or Substitutes?

Tolga Aydinliyim, Assistant Professor, Baruch College, United States

Earlier research has concluded that the Internet retailer can mitigate strategic purchase deferrals by disclosing low stock levels accurately. I investigate how optimal inventory disclosure results change for retailers that implement flexible return policies and offer sizable refunds.

051-0841 Optimal Retail Returns Policy with Consumer Opportunism

Guangzhi Shang, Student, University of South Carolina, United States

Bikram Ghosh, Assistant Professor, University of South Carolina, United States

Michael Galbreth, Associate Professor, University of South Carolina, United States

We study a retailer's optimal return policy and profit in the presence of return policy abusers, who purchase a product with no intention to retain it. Several novel and counter-intuitive analytical results are derived.

87	Friday, 03:30 PM - 05:00 PM, A704	<i>Track:</i> Healthcare Operations Management
	<i>Session:</i> Improving Healthcare Delivery Operations	
	<i>Chair(s):</i> Elham Torabi	

051-0388 SURGE: Smoothing Utilization of Resources is Good for Emergencies

Yu Wang, Student, Indiana University, United States

Jonathan Helm, Assistant Professor, Indiana University, United States

Alex Mills, Assistant Professor, Indiana University, United States

In many systems, optimizing for daily operations is detrimental for disruptions. However, we show that in healthcare facilities, a demand management program for regular patients improves surge capacity, which is used to respond to disruptions, whether the disruptions occur randomly or are caused by an adversary (such as a terrorist).

051-0470 Analysis and Forecasting of Hourly Patient Volumes in the Emergency Department

Lauren Laker, Student, University of Cincinnati, United States

Craig Froehle, Associate Professor, University of Cincinnati, United States

Elizabeth Leenellett, Assistant Professor, University of Cincinnati, United States

Emergency departments face stochastic arrivals, making capacity planning difficult. We develop a patient volume forecasting model based on 3+ years of historical arrivals for a new hospital in order to forecast ahead 7 months. The study considers a variety of temporal variables, seasonality, linear and nonlinear trend, and weather effects.

051-0916 ICU and PCU Admission Control Incorporating Patient Mortality Risk

Jeffrey Kritzman, Student, University of Michigan Ann Arbor, United States

Jivan Deglise-Hawkinson, Student, University of Michigan Ann Arbor, United States

Jonathan Helm, Assistant Professor, Indiana University, United States

Mark Cowen, Chief, Clinical Decision Services, St. Joseph Mercy Health System, United States

Mark Van Oyen, Professor, University of Michigan Ann Arbor, United States

Intensive Care Units (ICUs) and Progressive Care Units (PCUs) are highly utilized, costly resources that provide benefit to patients with advanced care needs or high mortality risk. Our methodology for ICU and PCU admission control considers patient blocking, care needs, risk, and flow pathways.

051-0288 Modeling the Drivers of Regional Stroke Team Responsiveness

Elham Torabi, Student, University of Cincinnati, United States
 Craig Froehle, Associate Professor, University of Cincinnati, United States
 Opeolu Adeoye, Associate Professor, University of Cincinnati, United States

Appropriate treatment of ischemic stroke requires temporal urgency. Stroke teams provide expert regional care, but can delay care due to travel time. Using GIS and Monte Carlo simulation, we examine effects on care timeliness from policies for physician travel to remote sites, deployment of telemedicine technology, and other operational parameters.

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Friday, 03:30 PM - 05:00 PM, A705

Track: Healthcare Operations Management

Session: Disease Modeling and Advances in Quality of Care

Chair(s): Eva Lee

051-1327 Ranking Hospitals by Antimicrobial Resistance Rates

Paul Brooks, Associate Professor, Virginia Commonwealth University, United States
 Amy Pakyz, Associate Professor, Virginia Commonwealth University, United States
 Ron Polk, Professor, Virginia Commonwealth University, United States

Antimicrobial-resistant infections lead to poor prognoses, longer hospital stays, increased medical costs, and inefficient use of resources. We evaluate methods for combining resistance rates for drug/microbe pairs into a measure of the overall burden for hospitals. Included is a method for robust principal component analysis.

051-1373 An Agent-Based Modeling Approach to Reducing Pathogenic Transmission

Sean Barnes, Professor, University of Maryland, United States
 Bruce Golden, Professor, University of Maryland, United States
 Edward Wasil, Professor, American University, United States

The spread of infectious diseases exists on scales ranging from individual hospital units to the increasingly connected global environment. We present several agent-based models developed to assist infection control professionals in understanding transmission dynamics in medical facilities and community populations and identifying the best methods for intervention.

051-0562 Early Detection of Bioterrorism: Monitoring Disease Using an Agent-Based Model

Xia Hu, Student, University of Maryland, United States
 Sean Barnes, Professor, University of Maryland, United States
 Bruce Golden, Professor, University of Maryland, United States

We propose an agent-based model to capture the transmission patterns of disease caused by bioterrorism attacks and epidemic outbreaks and to quickly differentiate between the two scenarios. Based on the aggregated infection trends, we can detect a bioterrorism attack when only a small proportion of the population is infected.

051-1372 Designing Personalized Treatment for Patients with Multiple Disease Conditions

Eva Lee, Professor, Georgia Institute of Technology, United States

Working with Grady Health System, we design a personalized adaptive treatment for patients with multiple comorbidities. The optimization-simulation model factors the response of patients to treatment and dynamically optimize it to improve the long-term outcome. Model is validated on 100 pregnant women with diabetes with or without obesity.

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Friday, 03:30 PM - 05:00 PM, A706

Track: Healthcare Operations Management

Session: Healthcare Quality

Chair(s): David Dobrzykowski

051-1404 Creating a Culture of Quality in an Academic Medical Center

Paul St. Jacques, Associate Professor, Vanderbilt University, United States

We describe a system wide quality program implementation at an academic medical center. To fully engage department management, a financial incentive was awarded to departments based on program compliance. Creating a culture of quality produced a positive impact in healthcare delivery costs related to liability claims and patient satisfaction.

051-0763 A Useful Healthcare Operations Management Tool for Organizational Diagnosis toward Hospital Accreditation

Andreia Berto, Student, Universidade Federal De Santa Catarina, Brazil
 Vivian Uhlmann, Student, Universidade Federal De Santa Catarina, Brazil
 Patricia Kawase, Student, Universidade Federal De Santa Catarina, Brazil
 Rolf Erdmann, Professor, Universidade Federal De Santa Catarina, Brazil

A low-cost organizational diagnostic methodology tailored to meet specific features of healthcare facilities is proposed. It is based on the quality improvement cycle and is especially useful for organizations that are planning to increase their accreditation status level or for those that are setting up for the first time.

051-0245 Rethinking the Role of SERVQUAL on Patient-Satisfaction in Healthcare: Mediating Role of Affect & Participation

Samyadip Chakraborty, Student, IFHE University, India
 Tathagata Ghosh, Student, IFHE University, India
 David Dobrzykowski, Assistant Professor, Rutgers University, United States

Healthcare organizations nowadays closely monitor feelings and psychological-affect of patients for understanding the extent of patient-participation (customer-participation) and patient-satisfaction (customer-satisfaction). The service quality dimensions (Tangibility-Reliability-Responsiveness-Assurance-Empathy) can be rationally linked to the development of such affects. This study aims at empirically establishing five service-quality (SERVQUAL) dimensions as antecedents to customer-positivity (affect).

90	<p>Friday, 03:30 PM - 05:00 PM, A707 <i>Track: Product Innovation and Technology Management</i></p> <p><i>Session:</i> Innovation Logistics</p> <p><i>Chair(s):</i> Sreekumar Bhaskaran</p>
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- 051-0077** Managing Capacity for a Disruptive Innovation
 Bin Hu, Assistant Professor, University of North Carolina Chapel Hill, United States
 Jianfeng Lu, Assistant Professor, Duke University Durham, United States

We consider dynamic capacity management for disruptive innovations, which are characterized by limited initial supply and decreasing price. Particularly interesting is the fact that the capacity strategy affects market evolution. We show insights that are different from when market evolution is exogenous, and have interesting managerial implications.

- 051-0133** Inclusive Innovation: Broader Market Coverage for Innovative Products with Deliberate Supply Chain Leadership
 Vish Krishnan, Professor, University of California San Diego, United States
 Oleksiy Mnyshenko, Student, University of California San Diego, United States
 Hyoduk Shin, Assistant Professor, University of California San Diego, United States

How can we achieve broader market coverage for innovative products, i.e., inclusive innovation? Grounded in industrial practice, we show that deliberately choosing the contract leader and the investor in a multi-tiered supply chain can have a significant impact on market coverage. We discuss leadership handovers along the product life cycle.

- 051-0286** Supplier and Buyer Coordination for Knowledge Outsourcing
 Jaeseok Lee, Student, Georgia Institute of Technology, United States
 Cheryl Gaimon, Professor, Georgia Institute of Technology, United States

We introduce a Stackelberg game to investigate coordination between a buyer and a supplier for knowledge outsourcing. We find the buyer's absorptive capacity and the project scope are key drivers of the optimal decisions which include the buyer's levels of knowledge insourcing and outsourcing, and the supplier's price of knowledge.

- 051-1074** Optimal Co-design Strategy for Developing Customized Products
 Amit Basu, Professor, Southern Methodist University, United States
 Sreekumar Bhaskaran, Associate Professor, Southern Methodist University, United States

In many industries including software, consumer electronics and home construction, inputs from final consumers are important to create customized products. We develop an analytical model that captures these various effects and point to different strategies that could enable firms to incentivize their consumers to engage in co-design.

91	<p>Friday, 03:30 PM - 05:00 PM, A708 <i>Track: Revenue Management and Pricing</i></p> <p><i>Session:</i> Revenue Management and Pricing: Choice and Pricing Models</p> <p><i>Chair(s):</i> Sumit Kunnumkal</p>
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- 051-0151** Pricing of Multiple Ancillary Services
 Jianbo Qian, Student, University of Western Ontario, Canada
 Fredrik Odegaard, Assistant Professor, Lund University, Sweden

We consider the pricing problem multiple ancillary services. A seller with a fixed capacity of a primary item and multiple ancillary services sells to a group of heterogeneous customer. The seller has to determine prices for the primary item and all ancillary services in order to maximize expected revenue.

- 051-0130** Choice Modeling vs. Price Optimization for Revenue Management
 Pelin Pekgun, Assistant Professor, University of South Carolina, United States
 Mark Ferguson, Professor, University of South Carolina, United States

Traditional revenue management methods are no longer effective in an environment where prices and product offerings are highly transparent. In this talk, we review two approaches to address this, discrete choice modeling and price optimization using price sensitive demand models, and discuss the pros and cons of each approach.

- 051-0142** A New Compact LP Formulation for Choice Network RM
 Kalyan Talluri, Professor, universitat pompeu fabra, Spain
 Sumit Kunnumkal, Assistant Professor, Indian School of Business, India

We derive a new compact LP formulation for the choice network RM problem. Our LP gives an upper bound that is provably between the choice LP value and the affine relaxation, and often coming close to the latter in numerical experiments.

- 051-0165** Analysis of Self-Adjusting Controls for Dynamic Pricing with Unknown Demand Parameters
 George Chen, Student, University of Michigan Ann Arbor, United States
 Stefanus Jasin, Assistant Professor, University of Michigan Ann Arbor, United States
 Izak Duenyas, Professor, University of Michigan Ann Arbor, United States

We study the network-RM pricing problem with unknown demand function parameter. We show that the best attainable revenue loss rate in the general setting can be achieved without re-optimization. A much sharper rate can also be achieved when demand are well-separated using the proposed self-adjusting heuristic.

93	Friday, 03:30 PM - 05:00 PM, M101 <i>Session:</i> IT and Organizations - II <i>Chair(s):</i> Dennis Jamrose	<i>Track:</i> Information Systems
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051-1130 Adoption of E-Procurement Systems in Indian Industries - A Bayesian Structural Equation Modeling Approach

Ramkumar Maria Arputham, Student, Indian Institute of Technology Kharagpur, India
Mamata Jenamani, Associate Professor, Indian Institute of Technology Kharagpur, India

Theory extension or adaptation are normally followed in information systems research for theory building. In this paper, we show how Bayesian SEM can provide a statistically sound way of parameter estimation by taking basic technology acceptance model in adoption of e-procurement in Indian industries context.

051-1075 Assessing the Long-term Value of ERP System Customization: A Real Options Perspective

Dennis Jamrose, Student, SUNY at Buffalo, United States
Nallan Suresh, Professor, SUNY at Buffalo, United States

Customization is a factor contributing to successful ERP implementations. ERP modifications due to changing business needs over the lifespan of the system can become prohibitively costly or limited with increased customization levels. We present a research model based on real options theory to assess the long-term value of system customization.

051-1352 The Role of Perceived Complexity on E-procurement Continued Usage - An Empirical Investigation

Ramkumar Maria Arputham, Student, Indian Institute of Technology Kharagpur, India
Mamata Jenamani, Associate Professor, Indian Institute of Technology Kharagpur, India

This study examines the role of perceived complexity on organizational continued usage of e-procurement systems. We integrate perceived complexity into the technology acceptance model (TAM) for better understanding how perceived complexity influences e-procurement usage behavior. Using survey data and structural equation modeling, we test hypothesis of proposed model.

051-1132 Predicting Intention to Adopt E-procurement - An Empirical Investigation in Indian context

Ramkumar Maria Arputham, Student, Indian Institute of Technology Kharagpur, India
Mamata Jenamani, Associate Professor, Indian Institute of Technology Kharagpur, India

Based on the technology acceptance model (TAM), this study uses the framework of extended TAM to examine the employees acceptance of e-procurement systems in Indian organizations. Three types of determinants are demonstrated: Perceived usefulness, perceived ease of use and perceived complexity and tested against structural equation modeling

94	Friday, 03:30 PM - 05:00 PM, M102 <i>Session:</i> IT and Organizations - I <i>Chair(s):</i> Shirish C. Srivastava	<i>Track:</i> Information Systems
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051-0788 The Negative Influence of Operational Information Systems in Organizations

Shalini Chandra, Assistant Professor, S P Jain School of Global Management, Singapore
Anuragini Shirish, Student, Telecom Business School, France
Shirish C. Srivastava, Associate Professor, HEC Paris, France

Because of their pervasive influence operational technologies may be instrumental in inducing employee stress which can result in negative impacts on organizational outcomes. Grounding in technostress literature, we model and empirically examine the influence of technostressors on employee productivity and innovation; we also explore the possible ways for their mitigation.

051-0441 Social Commerce Initiatives and Firm Value: The Roles of Implementing Strategies and Product Characteristics

Hugo Lam, Student, The Hong Kong Polytechnic University, China
Andy Yeung, Professor, The Hong Kong Polytechnic University, China
Chris Lo, Assistant Professor, The Hong Kong Polytechnic University, China
T. C. E. Cheng, Professor, The Hong Kong Polytechnic University, China

We theoretically hypothesize and empirically find that social commerce initiatives (i.e., the integration of social media into sales or marketing process) increase firm value. Our research further reveals the important roles social commerce implementing strategies and product characteristics play in moderating the impact of social commerce initiatives on firm value.

051-0862 Online Interactive Technology Adoption and the Chinese E-commerce Firms' Competitiveness

Nachiappan Subramanian, Associate Professor, Nottingham University Business School, China
Jin ZHANG, Student, Nottingham University Business School, China

This study identifies the impact of online interactive technology adoption on the Chinese e-commerce firms. A competitive conceptual model is proposed based on technology, environment and organization (TOE) framework. We determine the influential adoption factors using survey from Taobao and Tmall sellers with the support of Structural Equation modelling analysis.

051-1321 Sterile Supplement Management in Public Hospital Group

Zhongmin Wang, Deputy Director, Jiangsu Province Hospital, China

This paper discusses the optimization problems that have to be solved when redesigning processes so as to improve material availability and reduce cost in a big public hospital group. We consider changing the supplement management principles of operating room and use of anesthesia information management system.

95	Friday, 03:30 PM - 05:00 PM, M103 <i>Session:</i> Empirical research in manufacturing operations-1 <i>Chair(s):</i> Ravi Srinivasan	<i>Track:</i> Manufacturing Operations
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051-0168 Startup Growth from a SCM Perspective

Stephan Wagner, Professor, Swiss Federal Institute of Technology Zurich, Switzerland
Ingmar Zanger, Student, Swiss Federal Institute of Technology Zurich, Switzerland

Fast growing startups are a key factor for job creation, market innovation and little understood from a SCM perspective. Based on case studies of manufacturing startups our research investigates SCM topics such as supplier selection, and distribution networks. We link our findings to recent literature and established theory.

051-0818 Does Continuous Improvement, Really Matter?

Ibere Souza, Student, GMAP | UNISINOS, Brazil
Luis Felipe Camargo, Assistant Professor, GMAP | UNISINOS, Brazil
Daniel Lacerda, Professor, GMAP | UNISINOS, Brazil
Luis Rodrigues, Professor, GMAP | UNISINOS, Brazil

This research will discuss the impacts of continuous improvement programs in the operations performance. Based on a manufacturer's case, applying a Data Envelopment Analysis model, the evidence reveals that there are situations in which the investments in continuous improvement may not result in a more efficient performance of the system.

051-1422 May the Force be With You! Supplier Exploitation, Power, and Ethics

David Wuttke, Student, Ebs Business School, Germany
Martin C Schleper, Student, Ebs Business School, Germany
Constantin Blome, Professor, Universit   Catholique De Louvain, Belgium

Using a conceptual framework we draw the line between common business practices and unethical supplier exploitation. We offer a research model resulting in a total of five propositions, with which we give an explanation for buying firms' different propensities to unethically exploit their suppliers.

96

Friday, 03:30 PM - 05:00 PM, M104

Track: Marketing and OM Interface

Session: Product Introduction, High Tech, and/or Game Theory Models

Chair(s): Janice Carrillo

051-0061 Optimal Pricing of Two Successive-Generation Products with Trade-in Options under Uncertainty

Rui Yin, Assistant Professor, Arizona State University Tempe, United States
Hongmin Li, Assistant Professor, Arizona State University Tempe, United States
Christopher Tang, Professor, University of California Los Angeles, United States

We consider a firm who sells two successive generations of a product to forward-looking consumers. A trade-in program is offered which allows consumers to trade-in the old product and buy the new product at a discounted price. We determine the optimal prices and examine the effectiveness of the trade-in program.

051-0452 Revenue-Maximizing Pricing and Scheduling Strategies in Service Systems with Flexible Customers

Qiao-Chu He, Student, University of California Berkeley, United States
Ying-Ju Chen, Assistant Professor, University of California Berkeley, United States

We propose a model of service operations systems with flexible customers, in which a firm maximizes revenue through jointly optimal pricing, scheduling, routing, and admission strategies. We explore the discriminatory service mechanism under information asymmetry, and the results shed light on the flexible customers' twofold impact on the system profitability.

051-0642 Effects of Remanufacturable Product Design on Market Segmentation and the Environment

Tianqin Shi, Student, University of Illinois Urbana-Champaign, United States
Wenjun Gu, Assistant Professor, Georgia State University, United States
Dilip Chhajed, Professor, University of Illinois Urbana-Champaign, United States
Nicholas Petruzzi, Professor, University of Illinois Urbana-Champaign, United States

Despite documented benefits of remanufacturing, many manufacturers have yet to embrace the idea of tapping into remanufactured-goods markets. In this paper, we answer this dichotomy and analyze the effect of remanufacturable product design on market segmentation, product and trade-in prices, return and remanufacturing rates and the impact on the environment.

051-0059 Contracts for Digital Goods Supply Chain: Wholesale vs. Agency Model

Yinliang (Ricky) Tan, Student, University of Florida, United States
Janice Carrillo, Associate Professor, University of Florida, United States
Kenny Cheng, Professor, University of Florida, United States

We compare the prevalent wholesale model and agency model in the current digital publishing market. We find that the agency model (i.e. revenue sharing) can coordinate the competing retailers by a simple revenue sharing scheme and also achieve Pareto improving.

97

Friday, 03:30 PM - 05:00 PM, M106

Track: OM and Economic Models

Session: Coproduction in Services and Supply Chains

Chair(s): Guillaume Roels Morvarid Rahmani

051-0208 Contracting and Work Dynamics in Collaborative Projects

Morvarid Rahmani, Assistant Professor, Georgia Institute of Technology, United States
Guillaume Roels, Assistant Professor, University of California Los Angeles, United States
Uday Karmarkar, Professor, University of California Los Angeles, United States

In this paper, we study how contractual arrangements affect the work dynamics between a vendor and a client in finite-deadline collaborative projects. Reward-sharing contracts give rise to free-riding; fixed-fee contracts give rise to client's scope creep; and time-and-material contracts give rise to vendor's scope creep.

051-0329 Process-based Contractual Mechanisms for Collaborative Development Initiatives

Vishal Agrawal, Assistant Professor, Georgetown University, United States
Nektarios Oraopoulos, Assistant Professor, Cambridge University, United Kingdom

In this paper, we study initiatives for co-development of new products and technologies. In such settings, it may be difficult a priori to specify contracts contingent on the outcome. Therefore, we investigate the efficacy of different process-based contracts, which instead specify the decision-making process.

- 051-1069** Inspection and Cooperative Improvement in Supply Quality Management
Hsiao-hui Lee, Assistant Professor, University of Hongkong, China
Cuihong Li, Associate Professor, University of Connecticut Storrs, United States

We study a buyer purchasing from a supplier with the concern of quality. The buyer can inspect the incoming units to penalize the supplier for defects, or cooperate with the supplier to improve the quality. We consider both complementary and substitutable relationships between the buyer's and supplier's quality improvement efforts.

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| 98 | Friday, 03:30 PM - 05:00 PM, International 2 | <i>Track:</i> General Track |
| | <i>Session:</i> Teaching and Positioning the Core OM Course (Part II) | |
| | <i>Chair(s):</i> Joel Goldhar | |

- 051-1458** Teaching the Core OM Course: Methods, Materials, Tools and Techniques, Pedagogy and 'Tricks of the Trade'
Joel Goldhar, Professor, Illinois Institute of Technology, United States
Arthur Hill, Professor, University of Minnesota, United States

How do we best teach the OM course to various types of students: MBA, UG, Working Professionals, On-Line, Executives, Second Language Learners, Non-Majors, etc.? What are your favorite cases, readings, textbooks, games and exercises, plant tours, simulations, projects, etc.? What works and what has not worked, and why? How do we best get students 'engaged' and excited about OM concepts and tools? Where do we go from here? How do we teach new OM PhD's how to teach OM? All Attendees are expected to be active Participants in the discussion. Bring your experiences, questions and excitement about teaching OM!

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| 99 | Friday, 03:30 PM - 05:00 PM, International 3 | <i>Track:</i> Scheduling and Logistics |
| | <i>Session:</i> Assignment and Machine & Project Scheduling Problems | |
| | <i>Chair(s):</i> Yumei Huo | |

- 051-1375** Development of the Optimized Algorithm for Quay Wall Assignment Problem in Shipbuilding
Soon-Ik Hong, Researcher, Hyundai Heavy Industry Co., Korea, Republic of (South Korea)
Sang-Hyup Lee, Principal Researcher, Hyundai Heavy Industry Co., Korea, Republic of (South Korea)
Seung Jin Ha, Principal Researcher, Hyundai Heavy Industry Co., Korea, Republic of (South Korea)
Dae-Soon Kim, director, Hyundai Heavy Industry Co., Korea, Republic of (South Korea)

In this paper, the optimized scheduling algorithm for quay wall assignment problem was studied. A heuristic algorithm deciding an optimized schedule to assign ships is proposed for improving efficiency and productivity of the quay walls. The result of the proposed algorithm provides reasonable solution for quay wall assignment.

- 051-0779** Minimizing Total Completion Time in a Two-Machine Flow shop Subject to Availability Constraint
Yumei Huo, Associate Professor, City University of New York, United States
Hairong Zhao, Associate Professor, Purdue University, United States

We study the problem of minimizing total completion time in a two-machine flow shop subject to the availability constraint. The problem is NP-hard even if the machines are always available. We design a branch-and-bound algorithm as well as heuristics, and we use experiments to evaluate their performance.

- 051-0207** Makespan Minimization Subject to Machine Unavailability and Total Completion Time Constraints
Yumei Huo, Associate Professor, City University of New York, United States

We study the bi-criteria scheduling problem on parallel machines with limited availability. The goal is to minimize the makespan subject to the minimized total completion time. We give an optimal polynomial time algorithm when machines have multiple unavailable intervals, but at any time, there is at most one machine unavailable.

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| 100 | Friday, 03:30 PM - 05:00 PM, International 4 | <i>Track:</i> Behavior in Operations Management |
| | <i>Session:</i> Bounded Rationality, Fairness and Reciprocity | |
| | <i>Chair(s):</i> Kay-Yut Chen | |

- 051-0163** Optimizing Labor Productivity and Cost with Multiple Skills and Multiple Work Types
Kay-Yut Chen, Principal Scientist, Hp Labs, United States
Haitao Li, Assistant Professor, Missouri State University, United States
Alex Zhang, Distinguished Technologist, Hp Labs, United States
Claudia Márquez-Nava, Scientist, DHL, Mexico
Pano Santos, Distinguished Technologist, Hp Labs, United States

We study a workforce planning problem in which employees reciprocate to higher wages by increasing productivity; we incorporate reciprocity in the form of a productivity response function which is nonlinear. Our problem is to decide on the wage levels and the workforce capacities to minimize the total cost.

- 051-0406** Fairness in a Capacity-Investment Model
Kay-Yut Chen, Principal Scientist, Hp Labs, United States
Claudia Marquez Nava, Student, Itesm Toluca, Mexico
Cipriano Santos, Distinguished Technologist, Hp Labs, United States

We incorporate fairness in a capacity-investment game, where the perception of fairness can differ between firms. The efficient equilibrium is only possible when this difference is low. If perceptions of fairness differ greatly, the unique equilibrium is no production. We propose an Index to characterize each type of equilibrium.

- 051-0577** Bounded Rationality and Learning in the Economic Order Quantity Setting
Kay-Yut Chen, Principal Scientist, Hp Labs, United States

Yan Wu, Associate Professor, University of Kansas, United States

Existing behavioral OM literature focuses on stationary environments. We extend the EWA model to capture individuals' learning behavior in changing but "similar" environments. The model is applied to an EOQ setting where the costs are changing and we shows that this "learning from similar experience" effect is significant.

101	<p>Friday, 03:30 PM - 05:00 PM, International 5 <i>Track: Supply Chain Contracting</i></p> <p><i>Session:</i> Supply Chain Contracting Issues</p> <p><i>Chair(s):</i> Greys Sosic Fang Tian</p>
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051-0067 The Signaling and Incentive Effects of Supplier Awards

Ruth Beer, Student, University of Michigan, Ross School of Business, United States
 Hyun-soo Ahn, Associate Professor, University of Michigan Ann Arbor, United States
 Stephen Leider, Assistant Professor, University of Michigan Ann Arbor, United States

Many firms recognize the importance of supplier performance by giving out a symbolic award to reward their suppliers' efforts. We show, both theoretically and experimentally, the existence of two contrary effects: motivational effects on suppliers, and competition effects resulting from signaling to other buyers that this supplier is good.

051-0078 Opaque Distribution Channels for Competing Service Providers: Posted Price vs. Name-Your-Own-Price Mechanisms

Rachel Chen, Associate Professor, University of California Davis, United States
 Esther Gal-Or, Professor, University of Pittsburg, United States
 Paolo Roma, Assistant Professor, Universita Degli Studi Di Palermo, Italy

Opaque selling has been widely adopted by service providers in the travel industry to sell off leftover capacity under stochastic demand. We study the impact of different selling mechanisms, Posted Price (PP) vs. Name-Your-Own-Price (NYOP), of an opaque reseller on competing service providers who face forward-looking customers.

051-1065 Supplier Competition and Improvement Effort

Cuihong Li, Associate Professor, University of Connecticut Storrs, United States

We consider a buyer sourcing from a number of suppliers. The suppliers invest in cost reduction before they compete for the contract based their costs. We analyze when supplier competition encourages or discourages their cost-reduction effort, and how to design the supply base considering such effects.

102	<p>Friday, 03:30 PM - 05:00 PM, International 6 <i>Track: Service Operations</i></p> <p><i>Session:</i> The Delicate Balance Between Depth and Breadth in Service Research</p> <p><i>Chair(s):</i> Rohit Verma</p>
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051-0282 The Delicate Balance between Depth and Breadth in Service Research

Rohit Verma, Professor, Cornell University, United States
 Joy Field, Associate Professor, Boston College, United States
 Vishal Gaur, Professor, Cornell University, United States
 Julie Paquette, Assistant Professor, Hec Montreal, Canada
 Liana Victorino, Assistant Professor, University of Victoria, Canada

Some researchers study topics central to many types of services (e.g. waiting lines, service quality, various issues related to service design) while others focus on specific service industries (e.g. retail, healthcare, hospitality). The purpose of this panel is to discuss the positives and negatives of each research approach for services.

103	<p>Friday, 03:30 PM - 05:00 PM, International 7 <i>Track: Supply Chain Management</i></p> <p><i>Session:</i> Social Responsibility in Supply Chain Management</p> <p><i>Chair(s):</i> Goker Aydin Tim Kraft</p>
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051-0015 Improving Supplier Environmental Performance

Ozgen Karaer, Assistant Professor, Middle East Technical University, Turkey
 John Khawam, Assistant Professor, Naval Postgraduate School, United States
 Tim Kraft, Assistant Professor, University of Virginia, United States

This research is based on our work with a nonprofit and its efforts to introduce to industries a tool for sharing chemical toxicity between suppliers and firms. We investigate when a firm should introduce competition amongst its suppliers versus work with an existing supplier to improve a supplier's environmental performance.

051-0756 Extended Producer Responsibility (EPR) for Unused Pharmaceuticals

Isil Alev, Student, Georgia Institute of Technology, United States
 Atalay Atasü, Associate Professor, Georgia Institute of Technology, United States
 Ozlem Ergun, Associate Professor, Georgia Institute of Technology, United States
 Beril Toktay, Professor, Georgia Institute of Technology, United States

EPR regulations are gaining traction in context of managing unused pharmaceuticals. In our work, we build a game-theoretic model focusing on the interactions between doctors, patients, manufacturers and insurance companies to analyze the effectiveness of common EPR policies. Accordingly, we uncover efficiency conditions for socially optimal pharmaceutical collection programs.

051-0863 Mitigate Supplier Responsibility Risk in Emerging Economies: An Ethical Sourcing Framework

Li Chen, Associate Professor, Duke University Durham, United States
 Hau Lee, Professor, Stanford University, United States

Sourcing from emerging and developing economies may yield direct cost savings, but this practice often entails greater supplier responsibility risk. In this paper, we develop an ethical sourcing framework to study a variety of different actions buyers can take to mitigate such risks.

104

Friday, 03:30 PM - 05:00 PM, International 8

Track: Supply Chain Management*Session:* Trust, Integration, and Collaboration in Supply Chains*Chair(s):* Yoon Hee Kim**051-0719** How to Integrate your Suppliers through Process and Information Management Capabilities

James Hill, Associate Professor, Ohio State University, United States

Ping Wang, Assistant Professor, Texas A&M - Galveston, United States

Zhen He, Professor, Tianjin University, China

Previous research on supplier integration has mainly focused on its direct impact on performance. However, how firms build up appropriate capabilities to facilitate supplier integration has not yet been fully understood. This research investigates how process management capability and information management capability moderate the relationship between supplier integration and performance.

051-0671 Supply Chain Integration, Collaboration, or Cooperation: Which one would you Choose ?

Mikaela Polyviou, Student, Ohio State University, United States

Johnny Rungtusanatham, Professor, Ohio State University, United States

POM researchers have shown great interest in exploring how two entities work together. This has oftentimes resulted in a proliferation of labels from supply-chain integration to supply-chain collaboration to supply-chain cooperation. Are these labels delineating different phenomena? We provide evidence to show that the contrary is true.

051-1013 The Role of Employee Integration in Supply Chain Integration

Yoon Hee Kim, Assistant Professor, University of Western Ontario, Canada

DaeSoo Kim, Professor, Korea University, Korea, Republic of (South Korea)

BooYun cho, Assistant Professor, Jeju National University, Korea, Republic of (South Korea)

Supply chain integration (SCI) has received increasing attention. SCI is a complex phenomenon that transcends organizational and functional boundaries as well as hierarchical layers. Yet, studies have focused on SCI across exchange partners and internal functions while ignoring employee integration. This study investigates the role of employee integration in SCI.

051-0449 Trust across Supply Chain Partners: The Influence on Operational Practices and Performance

Dongli Zhang, Assistant Professor, Fordham University, United States

Sarah Wu, Associate Professor, Fordham University, United States

Certain operational practices (e.g. new product development) need the cooperation between supply chain partners where inter-organizational trust plays an important role. This research investigates the following research questions: Does different inter-organizational trust level influence the implementation of certain practices? Does trust moderate the relationship between the practices and performance?

051-0962 Process Management Approach in Goal Oriented Supply Chain Performance: A Structural Equation Modeling Approach

Kayvan Lavassani, Assistant Professor, North Carolina Central University, United States

Bahar Movahedi, Assistant Professor, North Carolina Central University, United States

Aligning the business processes with various aspects of supply chain performance goals has been an important managerial challenge. Based on an empirical study of for-profit organizations in North America this study develops a model for aligning supply chain processes with various aspects of supply chain performance.

105

Friday, 03:30 PM - 05:00 PM, International 9

Track: Sustainable Operations*Session:* Cleaner Production and Supply Chains*Chair(s):* Afshin Mansouri**051-0143** Manufacturing Cost Reductions as Drivers for Eco-Efficiency Improvements

Rosangela Vanalle, Professor, Universidade Nove De Julho, Brazil

Elpidio Costa, Student, UNINOVE, Brazil

Wagner Lucato, Professor, Universidade Nove De Julho, Brazil

In search for higher profits, firms have used value analysis to reduce their costs. However, environmental consequences have hardly been considered. The purpose of this paper is to show that it is possible to obtain eco-efficiency gains even not considering environmental issues as part of the operational cost reduction efforts.

051-0450 Advancing Environmental Performance: The Role of Vertical Integration

Richard Kraude, Student, Michigan State University, United States

Ram Narasimhan, Professor, Michigan State University, United States

While multiple subgroups of research have emerged in the context of sustainability, the sourcing decision remains relatively absent from the conversation. We explore the relationship of vertical integration and environmental performance through a conceptual model developed on the foundations of absorptive capacity and agency theory.

051-0766 The State of the Art in Cleaner Production: A Bibliometric Analysis from 2000 until 2013

Hugo Yoshizaki, Associate Professor, Universidade De Sao Paulo, Brazil

Roberto Fray da Silva, Student, Universidade De Sao Paulo, Brazil

João Amato-Neto, Professor, Universidade De Sao Paulo, Brazil

Carlos Eduardo Cugnasca, Professor, Universidade De Sao Paulo, Brazil

Cleaner production maximizes output while minimizing residues. Bibliometry was used to identify its main authors, papers, journals and events from 2000 to 2013. Initially, 23,549 papers were found. Filtering and analysis resulted in 500 relevant papers. Three clusters were identified: production systems; development theories; and lower environmental impact systems.

051-0240 Study of Sustainability Measures in Supply Chain Management: A Grounded Theory Approach

Anirban adhikary, Student, Research scholar, Production & Operations Management Department, India

Krishna Sundar Diatha, Professor, Indian Institute of Management Bangalore, India

Sustainable business practices in supply chain management are strategic imperative and measuring sustainability is a challenge to researchers and practitioners. In this paper using Grounded Theory we have identified the key parameters to measure sustainability from the literature and a frame work to measure sustainability in supply chains is presented.

051-0203 Trade-off between Sustainability and Service Level in Flowshop Scheduling

Afshin Mansouri, Senior Lecturer, Brunel University, United Kingdom
Emel Aktas, Lecturer, Brunel Business School, United Kingdom
Umut Besikci, Senior Software Developer, Netiket Bilisim, Turkey

We address the trade-off between energy consumption, a measure of sustainability and makespan, an indicator of service in flowshop scheduling. We develop solution techniques seeking the Pareto frontier and compare their performance with new lower bounds. The research facilitates informed decision making by production schedulers and improves sustainability of operations.

107	Friday, 03:30 PM - 05:00 PM, International B	<i>Track:</i> Humanitarian Operations and Crisis Management
	<i>Session:</i> Issues in Humanitarian Operations	
	<i>Chair(s):</i> Dorit Bölsche	

051-0418 Humanitarian Logistics Management - A Case of Phailin

Sourabh Bhattacharya, Associate Professor, Institute of Management Technology, India
Nitin Jain, Student, Institute of Management Technology, India

The humanitarian logistics frameworks proposed in the literature lacks empirical validation. This paper aims to validate the framework proposed by Gyongyi Kovacs and Karen M Spens (2007) using the events that occurred before, during and after the cyclone Phailin that hit the east coast of India in October 2013.

051-0845 Pre-Positioning Relief Supplies in Brazil through Location Decisions

Irineu Brito Jr, Student, Universidade De Sao Paulo, Brazil
Adriana Leiras, Assistant Professor, Pontifica Universidade Catolica Do Rio De Janeiro- Puc Rio, Brazil
Hugo Yoshizaki, Associate Professor, Universidade De Sao Paulo, Brazil

In humanitarian logistics, specific goals not only minimizing costs should be considered. Considering eight disaster scenarios, this work aims to define locations for pre-positioning disaster relief supplies through a two-stage stochastic model with coverage constraints based on distribution costs, penalties for unattended demand, disruptions in highways, and media influence.

051-0192 Hazardous Goods in Humanitarian Supply Chains

Dorit Bölsche, Professor, University of Applied Sciences, Germany

Hazardous goods can be either the reason for disasters (e.g. Fukushima) or as relief items part of humanitarian supply chains (e.g. medicines, gases, oils). The publication deals with environmental and health risks which occur from hazardous goods, with the international standard GHS and with possibilities to reduce the identified risks.

051-0752 Simulation Decision Support on the Preparation of Emergency Rescue Resources

Desheng Wu, Senior Lecturer, University of Toronto, Canada
Jia Liu, Student, Wuhan University, China
David Olson, Professor, University of Nebraska Lincoln, United States

We demonstrate Simulation Decision Support including "principle", "modelling", "system" and "simulation" on the Preparation of Emergency Rescue Resources. We employ the POS system to simulate the preparation of emergency rescue resources in China Ya'an earthquake happened in April 2013. Simulation is benchmarked with actual situation to verify POS system.

108	Friday, 03:30 PM - 05:00 PM, International C	<i>Track:</i> Supply Chain Risk Management
	<i>Session:</i> Supply Chain Risk Management	
	<i>Chair(s):</i> Harish Krishnan Juan Serpa	

051-1207 It's a Dangerous Job, But Someone's Got To Do It: Policy Incentives to Mitigate the Impact of Tort Liability

Juan Serpa, Student, University of British Columbia, Canada
Harish Krishnan, Associate Professor, University of British Columbia, Canada

In industries managing dangerous operations, the high costs of accident liability often drive firms out of the market, causing social welfare to decrease. To mitigate this problem, a social planner can subsidize reliability investments OR subsidize the cost of operational accidents. In this paper, we explore the optimal policy intervention.

051-1211 The Value of Diagnostic Test in Contract Manufacturing under Supply Risk

Mohammad Nikoofal, Student, McGill University, Canada
Mehmet Gumus, Associate Professor, McGill University, Canada

Although the contract manufacturing emerges as a dominant business model, the recent surveys show that it comes at the cost of increased risk, reduced visibility, and loss of control. In this paper, we analyze the value of diagnostic test in dealing with supply risk.

051-0580 The Effect of P2P Marketplaces on Retailing in the Presence of Mismatch Risk

Lifei Jiang, Student, University of Waterloo, Canada
Stan Dimitrov, Assistant Professor, University of Waterloo, Canada
Benny Mantin, Assistant Professor, University of Waterloo, Canada

Who benefit from P2P marketplaces? Marketplaces can mitigate some of the mismatch risk faced by consumers by allowing them to sell these goods. Thus, in a two-period setting, marketplaces can benefit retailers by stimulating first period demand. However, marketplaces also compete with retailers over consumers in the second period.

051-0905 Disruption Mitigation Strategies with Supply and Demand Uncertainty

Nickolas Freeman, Student, University of Alabama Tuscaloosa, United States
Sharif Melouk, Associate Professor, University of Alabama Tuscaloosa, United States
John Mittenthal, Associate Professor, University of Alabama Tuscaloosa, United States
Burcu Keskin, Associate Professor, University of Alabama Tuscaloosa, United States

We consider disruption mitigation strategies for a capacitated manufacturer with supply and demand uncertainty. Sub-components dictate the quality of the manufactured products. Using an analytical model, we investigate and compare mitigation strategies including multi-sourcing, downward substitution, and in-house production.

051-1162 Spot Trading vs. Financial Hedging: Risk Management in Spot Market

Xuan Zhao, Associate Professor, Wilfrid Laurier University, Canada
Wei Xing, Associate Professor, Qufu Normal University, China
Shanshan Ma, Student, Chinese Academy of Science, China

This paper seeks to explore how risk management instruments, namely, spot trading and financial hedging strategies, affect decision and performance of two-echelon supply chains under competition.

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Friday, 05:15 PM - 06:45 PM, A602

Track: Purchasing and Supply Management*Session:* Managing supply organizations and networks*Chair(s):* Veronica Villena**051-0697** Expanding Supply Chain Networks through Business Membership Organizations

James Hill, Associate Professor, Ohio State University, United States
 Mengyang Pan, Student, Ohio State University, United States
 Ian Blount, Owner, coalescence, United States

Small-and Medium-sized firms often face the challenge of reputation building. One viable way to address reputation building is through third party organizations. Business Membership Organizations (BMOs) provide important social resources for firms to establish reputation. We explore the affect of participation and commitment through BMO services on reputation building.

051-1294 Reconciling Purchasing Portfolio Models with Supply Network Approach

Jalba Miniussi, Student, Fundacao Getulio Vargas, Brazil
 Luiz Brito, Professor, Fundacao Getulio Vargas, Brazil

Two distinct streams of research have influenced supply management: purchasing portfolio models, largely based on power-dependence balancing, and the supply networks approach, focused on the buyer-supplier relationships nature, embedded in a larger supply network. Bradenburger's value creation concept may offer an integrative model reconciling the strengths from the two visions.

051-1411 The Role of Ambitious Goals and Supply Chain Function's Strategic Importance in Inducing Managers' Behaviors

Veronica Villena, Assistant Professor, Penn State University University Park, United States
 Guanyi Lu, Assistant Professor, Oregon State University, United States
 Luis Gomez-Mejia, Professor, Texas A&M University College Station, United States
 Elena Revilla, Professor, IE Universidad, Spain

The interaction between the top management team (TMT) and supply chain manager (SCMer) is fundamental to understand how supply chain decisions are implemented. We show that SCMer's perceive increased risk for loss of compensation/employment as TMT establishes ambitious goals and less risk as their function is critical to corporate strategy.

051-1424 Resource Based View of Supplier and Customer Integration in New Product Development Projects

Jayanth Jayaram, Professor, University of South Carolina, United States

Prior empirical literature examined the influence of supplier integration practices on new product development (NPD) performance. In contrast, we use resource-based or capability view to offer a mediating influence of supplier integration. Specifically, we suggest that supplier integration practices positively enhance product fit to firm capability, which in turn, significantly affects NPD project performance. Data from 435 NPD projects in high tech industries is used to test the two propositions. The results indicated support for both propositions and implications of these results will be discussed.

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Friday, 05:15 PM - 06:45 PM, A701

Track: Closed Loop Supply Chains*Session:* Consumer Issues in Close Loop Supply Chains*Chair(s):* Serkan Akturk**051-0190** Accurate Response with Refurbished Consumer Returns

Marc Reimann, Professor, University of Graz, Austria

We extend the existing literature on accurate response by including a new reactive capability, namely the utilization of refurbished consumer returns from early sales to react to demand later in the selling season. Using a newsvendor-type model formulation we provide both analytical and numerical insights into the optimal decisions.

051-0290 Consumer Trade-in Program Design and the Quality of Return

Fei Qin, Student, University of Cincinnati, United States
 Michael Fry, Associate Professor, University of Cincinnati, United States
 Uday Rao, Associate Professor, University of Cincinnati, United States

Our work studies the structure of the supply chain facilitating used-product return from, and resale to, end consumers. Using a centrally managed trade-in program as a benchmark, we show that the degree of inefficiency across various decentralized trade-in supply chains depends on the quality of return.

051-0215 Product Design Decision in a Remanufacturing Setting

Serkan Akturk, Student, Mays Business School, Operations and Supply Chain Department, United States
 James Abbey, Assistant Professor, Texas A&M University College Station, United States
 Neil Geismar, Associate Professor, Texas A&M University College Station, United States

Benefits from remanufacturing do not come for free. The recovery of components requires investment at the concept design stage. However, design for remanufacturing takes longer time than other design options. That makes time to market longer for remanufacturable products. So, we model the optimal design philosophy at different market conditions.

051-0439 Optimization of a Closed-Loop Supply Chain in Presence of Three Way Recovery Policy under Uncertainty

Debabrata Das, Student, Indian Institute of Technology Bombay, India
 Pankaj Dutta, Assistant Professor, Indian Institute of Technology Bombay, India

This paper proposes an optimization model for a multi-period closed-loop supply chain by incorporating Three-Way-Recovery policy which determines optimal manufacturing, re-manufacturing, recycling and disposal plan to maximize overall profit by ensuring adherence to legislation. The uncertainty issues associated with the acquisition of used products have been quantified using chance-constraint programming.

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Friday, 05:15 PM - 06:45 PM, A702

Track: Empirical Research in Operations Management*Session:* Organizing Operations for Effectiveness*Chair(s):* Joel Goldhar

051-0628 Single-Item Perceptual Measures for POM Phenomena are a Menace for Survey Research. Or not?

Johnny Rungtusanatham, Professor, Ohio State University, United States
Mikaella Polyviou, Student, Ohio State University, United States
Christopher Swanton, Student, University of Minnesota, United States

POM survey researchers typically measure the underlying dimensions constituting a POM phenomenon using multi-item perceptual scales. We propose that when the focus of research interest is at the level of the POM phenomenon itself, single-item perceptual measures to operationalize the underlying dimensions will lead to the same conclusions.

051-0466 Performance of Office-Based versus Home-Based Call Center Agents: Evidence from Three Industries in Korea

Hyojeong Kim, Student, University of Oregon, Korea, Republic of (South Korea)
Nagesh Murthy, Associate Professor, University of Oregon, United States

We examine the performance of call center agents that work from office vis-à-vis those that work from home. The home-based workers achieve significantly higher call productivity without any loss of call service quality. These differences are accentuated by task complexity and call routing clarity perceived by the agents.

051-0974 A Comparative Perspective of Process Management Practices and Performance: Exploring the role of Organizationa

Bahar Movahedi, Assistant Professor, North Carolina Central University, United States
Kayvan Lavassani, Assistant Professor, North Carolina Central University, United States

Management of organizational business processes is tightly related to the organizational performance. This empirical study investigates the role of process orientation in organizational performance. Furthermore several empirical models are developed using SEM to assess the moderating role of organizational size and industry on the relationship between process orientation and performance.

051-0586 The 'Disappearing' Chief Operating Officer - A Real Trend but a BIG MISTAKE

Joel Goldhar, Professor, Illinois Institute of Technology, United States
Susanna Duecker, Student, Illinois Institute of Technology, United States

Reporting on initial results from a statistical study of S&P2000 firm's C-Suite Organization Structure vs. Economic Value Added; which suggests that the the presence or absence of a 'Strong' COO leads to a significant difference in the economic performance of the organization; and some hypotheses about why this result occurs.

051-0242 Improving Collaborative Forecasting Performance in the Food Chain

Can Eksoz, Student, Brunel Business School, United Kingdom
Afshin Mansouri, Senior Lecturer, Brunel Business School, United Kingdom
Michael Bourlakis, Professor, Cranfield School of Management, United Kingdom
Emel Aktas, Lecturer, Brunel Business School, United Kingdom

This paper explores the factors influencing Collaborative Forecasting Performance (CFP) between manufacturers and retailers in the food chain. Following a survey in Europe and North America and a Partial Least Square analysis, we generate managerial insights aiming to improve CFP for perishable, seasonal, promotional, and newly launched food products.

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Friday, 05:15 PM - 06:45 PM, A703

Track: Manufacturing Operations

Session: Analytical Modeling of Manufacuring Operations

Chair(s): Rong Yuan

051-0910 Evaluation of the Production Line of the Heat Treatment Using the Queuing Theory and Simulation

Maria Oliveira Papa, Professor, The Methodist University of Piracicaba, Brazil
Ricardo Perez, Student, The Methodist University of Piracicaba, Brazil
Rodrigo Ferro, Student, The Methodist University of Piracicaba, Brazil
Andre Helleno, Professor, The Methodist University of Piracicaba, Brazil

The main purpose of this paper is to present a case study of application of simulation on the production line of the heat treatment. This study was developed using concepts of queuing theory and simulation. The main result showed the best distribution of products targeting the most responsive customer service.

051-0911 Inventory Storage in Robotic Fulfillment Centers

Rong Yuan, Student, Massachusetts Institute of Technology, United States
Stephen Graves, Professor, Massachusetts Institute of Technology, United States

We focus on improving the throughput of the fulfillment centers equipped with robotic picking systems. We compared a few different ordering picking and inventory stowing policies. In particular, we studied the impact of the distribution of the products among different storage locations on the throughput of the system.

051-1148 Optimal Purification Strategies Based on Quality-Yield Tradeoffs in Biomanufacturing Operations

Tugce Martagan, Student, University of Wisconsin Madison, United States
Ananth Krishnamurthy, Associate Professor, University of Wisconsin Madison, United States

We develop an infinite horizon Markov decision model to minimize costs of purification operations in biomanufacturing. The model considers quality-yield tradeoffs, and identifies the best equipment selection (chromatographic technique) and operating policy (pooling window) to minimize purification costs, and penalty costs for not meeting the demand or quality requirements.

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Friday, 05:15 PM - 06:45 PM, A704

Track: Healthcare Operations Management

Session: Patient Scheduling

Chair(s): William Millhiser

051-1390 Joint Panel Sizing and Appointment Scheduling in Outpatient Care

Christos Zacharias, Student, New York University, United States
Mor Armony, Associate Professor, New York University, United States

We address the joint problem of panel-sizing and appointment scheduling, so that patients do not face long backlogs and the medical facility is not overcrowded. By analyzing the two time-scales involved in accessing care (appointment-delay and clinic-delay), we show that either an "Open-Access" or a "Limited-Access" policy is optimal.

- 051-0857** Resilient Patient Scheduling in Complex Outpatient Clinics
 Elham Torabi, Student, University of Cincinnati, United States
 Craig Froehle, Associate Professor, University of Cincinnati, United States
 Uday Rao, Associate Professor, University of Cincinnati, United States
 Michael Magazine, Professor, University of Cincinnati, United States

Complex clinics involve multiple care providers, so coping with operational disruptions can be challenging. We develop a resilient patient scheduling method with uncertain clinical task durations, minimizing clinic duration and patient waits. We consider several different assumptions about task durations and test each model's resilience to disruption via discrete-event simulation.

- 051-1142** Designing Appointment System Templates with Operational Performance Targets
 William Millhiser, Associate Professor, Department of Management, United States
 Emre Veral, Professor, Department of Management, United States

We propose appointment templates that control the probability of patient waiting. Template designs achieve wait time uniformity across different patient and service environments with generalizable characteristics. Appointment intervals differ from average service times, moderated by patient show-rates and service time characteristics. Results call into question prior practice and literature.

115	Friday, 05:15 PM - 06:45 PM, A705	<i>Track:</i> Healthcare Operations Management
	<i>Session:</i> Resource Allocation in Emergency Medicine	
	<i>Chair(s):</i> Maria Mayorga	

- 051-0043** Simulation-Optimization for Ambulance Location Models
 Hari Rajagopalan, Associate Professor, Francis Marion University, United States
 Cem Saydam, Professor, University of North Carolina Charlotte, United States
 Elizabeth Sharer, Assistant Professor, Francis Marion University, United States
 Muhammad Zaffar, Assistant Professor, Suleman Dawood School of Business Lahore University of Management Sciences, Pakistan
 Maria Mayorga, Associate Professor, North Carolina State University, United States

Rapid response to medical emergencies is one of the main goals of Emergency Medical Service (EMS) systems. Ability to provide timely response is affected by fleet size and the locations of the ambulances. Literature on ambulance location has been dominated by models which either maximize or guarantee coverage.

- 051-0064** Resource Allocation Models for Shared Ambulance Services
 Lavanya Marla, Assistant Professor, University of Illinois Urbana-Champaign, United States

We consider a real-world setting where multiple ambulance services compete to serve a population. Here, 911-type services are currently being established, and they compete with existing ad-hoc services to serve customers. We present game-theoretic modeling frameworks that allow for better ambulance utilization (to decrease ambulance abandonment) and improved service.

- 051-0362** Real-Time Ambulance Redeployment With Workload Restrictions
 Shakiba Enayati, Student, North Carolina State University, United States
 Maria Mayorga, Associate Professor, North Carolina State University, United States
 Hari Rajagopalan, Associate Professor, Francis Marion University, United States
 Cem Saydam, Professor, University of North Carolina Charlotte, United States

Redeployment refers to a dynamic relocation of available ambulances to compensate for the loss in coverage due to busy vehicles. Undisciplined repositioning can result in a conflict with personnel interests and induce unnecessary fatigue. This paper provides a linear binary formulation to deal with maximizing coverage while restricting provider workloads.

116	Friday, 05:15 PM - 06:45 PM, A706	<i>Track:</i> Healthcare Operations Management
	<i>Session:</i> Healthcare Supply Chain Management and Practices	
	<i>Chair(s):</i> WC Benton	

- 051-0068** Procurement Service Triads: A Dependence-Power Study of Procurement in the Healthcare Sector
 Jurriaan de Jong, Assistant Professor, SUNY at Buffalo, United States
 WC Benton, Professor, Ohio State University, United States

Outsourcing of procurement business processes to procurement service providers has increased in recent years in a variety of industries. We study the effects of healthcare organizations' procurement outsourcing-induced dependence on their relationships with group purchasing organizations and suppliers and on inter-firm power in the healthcare supply chain.

- 051-1003** Beyond The Checklist: It is not WHAT to do but HOW to do it
 Rachna Shah, Associate Professor, University of Minnesota, United States
 Susan Goldstein, Associate Professor, University of Minnesota, United States

We examine the impact of task variability on process outcomes for STEMI patients. Using data from a physically-distributed healthcare supply-chain, we find that variation in task completion time negatively impacts patient length-of-stay and mortality. We also find that variability in inter-organizational tasks involving handoffs is worse than intra-organizational tasks.

- 051-0343** An Efficient Approach for Selecting an Optimal Pool of Physicians
 Luv Sharma, Student, Ohio State University, United States
 WC Benton, Professor, Ohio State University, United States
 Hojung Shin, Professor, Korea University, Korea, Republic of (South Korea)

Traditional hospital physician hiring practices based on individual physician characteristics may lead to suboptimal clinical performance. In this research, a DEA based approach is used to compare current hiring practices with the goal of choosing a cohort of physicians that leads to the most efficient productivity frontier for hospital clinical performance

051-0346 Medical equipment pricing strategies for New vs Refurbished Digital Imaging Equipment

Jurriaan de Jong, Assistant Professor, Suny At Buffalo, United States

WC Benton, Professor, Ohio State University, United States

Gokce Esenduran, Assistant Professor, Ohio State University, United States

A problem facing OEMs of medical equipment involves jointly managing and pricing new and refurbished products along with service contracts for new and refurbished products. An analytical model is developed to investigate this price setting problem faced by each of the major OEMs of medical digital imaging equipment.

117	Friday, 05:15 PM - 06:45 PM, A707	Track: Product Innovation and Technology Management
	Session: Entrepreneurial Operations	
	Chair(s): Onesun Yoo	

051-0382 The Entrepreneurial Newsvendor: Impact of Information Asymmetry on Operational Hedging and Profitability

Fehmi Tanrisever, Assistant Professor, Bilkent University, Netherlands

Sinan Erzurumlu, Associate Professor, Babson College, United States

Nitin Joglekar, Associate Professor, Boston University, United States

Moren Levesque, Professor, York University, Canada

Entrepreneurial newsvendors raise debt to support early-stage R&D investment to reduce cost and to fund production. We show that underinvestment can serve as an operational hedge against future under-production problems. Such hedges also mitigate effects of information asymmetry associated with raising debt and create value by enhancing access to capital.

051-1252 Optimal Learning and Development Strategy for Entrepreneurial Product Launch

Onesun Yoo, Assistant Professor, University College London, United Kingdom

Tingliang Huang, Assistant Professor, University College London, United Kingdom

Kenan Arifoglu, Assistant Professor, University College London, United Kingdom

An early stage entrepreneurial firm with a new product concept must maximize the chance of successful product launch. We formalize this lean approach to development via the Bayesian learning framework, and investigate the optimal development strategy.

051-1452 On the Effectiveness of Patenting Strategies in Innovation Races

Fabian Sting, Assistant Professor, Rotterdam School of Management, Netherlands

Juergen Mihm, Assistant Professor, INSEAD, France

Tan Wang, Independent, Dataesp Private LTD, Singapore

Which inventions should a company patent? We develop an integrative framework of patenting strategies and contingencies. Based on technology landscape simulations we identify competitive dynamics as the most salient determinant of the firm's patenting strategy. Thus our research contributes to establishing a contingency theory of patenting strategies.

118	Friday, 05:15 PM - 06:45 PM, A708	Track: Production Planning and Scheduling
	Session: Machine Maintenance and Scheduling	
	Chair(s): Sangoh Shim	

051-1145 Clearing Function Applied to Maintenance Planning

Rafael Wollmann, Student, Pontifical Catholic University of Parana, Brazil

Raimundo Sampaio, Professor, Pontifical Catholic University of Parana, Brazil

Viviane Bini, Student, Pontifical Catholic University of Parana, Brazil

One of the main challenges of industrial maintenance is when to act without affect the production due dates, to match demand. The concept of clearing function, initially developed to deal with production capacity planning, allows visibility to the maintenance planning. This paper comes to match clearing function to maintenance.

051-1215 Cyclic Hybrid Flow Shop Scheduling Problem with Limited Buffers and Machine Eligibility Constraints

S. Abolfazl (Mohamad) Soltani, Student, University of Alberta, Canada

Behrooz Karimi, , ,

In this paper cyclic policy is considered in hybrid flowshop scheduling problem for the first time. Firstly, a MLIP model is proposed. Then, some heuristics and meta-heuristics are suggested and compared. Results show that a simulated annealing method using some embedded heuristics is an effective approach for solving this problem.

051-1071 Designing a Real Time Scheduling System in a Semiconductor Manufacturing Fabrication

Sangoh Shim, Associate Professor, Hanbat National University, Korea, Republic of (South Korea)

Although various methodologies were proposed to solve scheduling problems related with a semiconductor fab. in many previous studies, there are few practical studies how to implement them. In this research, a framework of a real time scheduling system in the actual semiconductor manufacturing fabrication is developed.

051-0399 A Look-ahead Heuristic for the Parallel Machines Production in Minimizing Total Weighted Tardiness

Yue Xi, Assistant Professor, East Stroudsburg University of Pennsylvania, United States

Jaemin Jang, Associate Professor, University of Wisconsin Milwaukee, United States

This study proposes a look-ahead identical parallel machines heuristic (LAIPM). When a machine becomes idle, it selects a job to process from available jobs and near future jobs. Experiments shows that the proposed look-ahead heuristic outperforms available look-ahead heuristics and some non look-ahead heuristic.

120	Friday, 05:15 PM - 06:45 PM, M101	<i>Track:</i> Information Systems
	<i>Session:</i> Business Intelligence and Analytics	
	<i>Chair(s):</i> Feng Mai	

051-0633 Learning Product Knowledge from Online Reviews

Feng Mai, Student, University of Cincinnati, United States
 Roger Chiang, Associate Professor, University of Cincinnati, United States
 Xin Wang, Student, University of Cincinnati, United States

Insightful product reviews contributed by consumers to a variety of social media could potentially be a gold mine for product designing. Through analyzing the linguistic structure of review sentences, we propose a new framework for learning from unstructured online reviews to facilitate product design and market positioning.

051-0361 A Panel Data Approach for Fashion Sales Forecasting

Shuyun Ren, Student, Hong Kong Polytechnic Univ, Hong Kong
 Tsan-Ming Choi, Associate Professor, The Hong Kong Polytechnic University, Hong Kong
 Na Liu, Student, The Hong Kong Polytechnic University, Hong Kong
 Xuran Ivan Li, Student, Hong Kong Polytechnic Univ, Hong Kong

Sales forecasting is of importance in fashion business. We proposed a novel approach based on panel data rather than the traditional time series data. By evaluating the sales quantity and color trend prediction using the real data, the proposed approach yields better forecasting results and several interesting conclusions.

051-0578 Overcoming Misinformation Cascades in Online Social Networks

Eunae Yoo, Student, Arizona State University Tempe, United States
 Elliot Rabinovich, Professor, Arizona State University Tempe, United States

Humanitarian operations utilize social media to gather data, which can be inaccurate. We investigate how online social networks self-correct and what affects correction time by integrating Network Theory and Information Cascades Theory. Our study contributes to extant literature by investigating misinformation propagation and by analyzing cascades at the network level.

121	Friday, 05:15 PM - 06:45 PM, M102	<i>Track:</i> Inventory Management
	<i>Session:</i> Inventory management for retail	
	<i>Chair(s):</i> Dorothee Honhon Xiajun Pan	

051-1194 Inventory Replenishment in an Online Retail Environment

Jason Acimovic, Assistant Professor, Penn State University State College, United States
 Stephen Graves, Professor, Massachusetts Institute of Technology, United States

In online retailing, if demand cannot be satisfied from the closest warehouse, it spills over to another warehouse at an increased cost. Heterogeneous inbound leadtimes and operational realities further complicate matters. We examine an inventory replenishment policy that balances outbound shipping and inventory holding costs, while accounting for demand spillover.

051-1216 Bundling Strategies for Vertically Differentiated Products

Xiajun Pan, Assistant Professor, University of Florida, United States
 Dorothee Honhon, Assistant Professor, University of Texas Dallas, United States

We study how a retailer chooses the profit-maximizing bundling strategy for vertically differentiated products when the supply is abundant and limited respectively. We characterize conditions under which no bundling, pure bundling and mixed bundling strategies are optimal and provide efficient methods to calculate the optimal solutions.

051-1360 Managing the Inventory of Perishable Products as Vertically Differentiated Products

Dorothee Honhon, Assistant Professor, University of Texas Dallas, United States
 Xiajun Pan, Assistant Professor, University of Florida, United States
 Zumbul Atan, Assistant Professor, Eindhoven University of Technology, Netherlands

A retailer manages the inventory of a perishable product. Units which are about to expire are offered at a discount. Customers maximize their utility which is decreasing in selling price and increasing in product freshness. We obtain properties of the optimal replenishment and pricing policy and suggest heuristic policies.

051-1361 Learning with Censoring Information - Application to Assortment Planning

Kyle Hyndman, Assistant Professor, University of Texas Dallas, United States
 Canan Ulu, Assistant Professor, Georgetown University, United States
 Dorothee Honhon, Assistant Professor, University of Texas Dallas, United States

We design experiments wherein subjects gather censored information at a cost. One application for this setting is that of a retailer optimizing her assortment and observing sales, which provide censored information on consumer preferences. We show that subjects do not appropriately value censored information.

122	Friday, 05:15 PM - 06:45 PM, M103	<i>Track:</i> Manufacturing Operations
	<i>Session:</i> Models and algorithms for operational excellence -1	
	<i>Chair(s):</i> Vivek Khazode Byeong Yeol Lee	

051-1419 Modeling Performance of Discrete Manufacturing Line Using Operations-Time Chart

Vivek Khazode, Associate Professor, National Institute of Industrial Engineering, India
 Karuna Jain, Professor, National Institute of Industrial Engineering, India

Manufacturing performance can be modeled using different approaches. In this study, an Operations-Time chart is developed for a discrete manufacturing unit and performance is compared for two scenarios. The chart permits quick visualization of alternate redesign scenarios with possible improvements.

051-1144 Performance of a Production Line with Automated Guided Vehicle: A Case Study

Luiz Felipe Leite, Student, Centro Universitário da FEI, Brazil
 Robson Esposito, Student, Centro Universitário da FEI, Brazil
 Ana Paula Da Silva, Student, Centro Universitário da FEI, Brazil
 Fábio Lima, Professor, Centro Universitário da FEI, Brazil

The AGV (Automated Guided Vehicle) systems are often used to optimize the flow of materials within the production systems. In this work, the authors evaluate the usage of an AGV system in an industrial environment. Several simulations were carried out using Promodel software to validate the the industrial scenarios.

051-1379 Development of Camera Vision Based Yard Monitoring System for Off-shore Plant Manufacturing

Byeong Yeol Lee, Head Researcher, Hyundai Heavy Industry Co., Korea, Republic of (South Korea)
 Tae Hyun Baek, Head Researcher, Hyundai Heavy Industry Co., Korea, Republic of (South Korea)

In the off-shore plant manufacturing process, many assembly blocks are handled in a vast expense of yard. for the efficiency of block operation, yard monitoring is very important. In this paper, a camera vision based yard monitoring system, using augmented reality and image processing algorithms, is studied.

123	<p>Friday, 05:15 PM - 06:45 PM, M104</p> <p><i>Session:</i> Topics in Marketing and Operations</p> <p><i>Chair(s):</i> Gokce Esenduran</p> <p style="text-align: right;"><i>Track:</i> Marketing and OM Interface</p>
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051-0397 The Impact of Trade-in Programs on the Online Market of Textbooks

Mohammad Ghuloum, Student, Indiana University, United States
 Gilvan Souza, Associate Professor, Indiana University, United States

Online book retailers offer students two ways to dispose of their textbooks, through trade-ins or the secondary market. We study how the co-existence of the two options impacts publishers, retailers, and students. We find that establishing a trade-in program reverses the impact initially produced by the secondary market.

051-1078 Managing Dual Distribution Channels

Gokce Esenduran, Assistant Professor, Ohio State University, United States
 Lauren Xiaoyuan Lu, Assistant Professor, University of North Carolina Chapel Hill, United States
 Jayashankar Swaminathan, Professor, University of North Carolina Chapel Hill, United States

We consider a manufacturer selling products to dealers and rental agencies. Prior research shows that buyback program, where manufacturers buy used rental items back and sell them through dealers, is preferred because it alleviates channel conflicts between the intermediaries. We identify other conditions that justify manufacturer's choice of a buyback-program.

051-1163 A New "Golden Rule" in Town: Multisupplier Contact in the U.S. Ketchup Industry

Cem Ozturk, Assistant Professor, Georgia Institute of Technology, United States
 Necati Tereyagoglu, Assistant Professor, Georgia Institute of Technology, United States

We examine empirically the effects of multisupplier and multimarket contact on pricing decisions of retailers in the U.S. ketchup industry. We find that prices are higher in markets served by retailers with extensive contacts in others markets. Moreover, we show that prices are higher when retailers use the same suppliers.

051-1336 The Exponential Choice Model: A New Alternative for Assortment and Price Optimization

Aydin Alptekinoglu, Associate Professor, Penn State University State College, United States
 John Semple, Professor, Southern Methodist University, United States

We propose a new discrete choice model and explore its implications for pricing and assortment planning. Greatly facilitated by the fact that the loglikelihood function is concave in the unknown parameters, we estimate our model and compare it with multinomial logit on real choice data.

124	<p>Friday, 05:15 PM - 06:45 PM, M106</p> <p><i>Session:</i> Pricing and Firm Strategy</p> <p><i>Chair(s):</i> Yiangos Papanastasiou</p> <p style="text-align: right;"><i>Track:</i> OM and Economic Models</p>
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051-0821 Pricing and Return Policy Design in a Dual-Channel Environment

Liang Lu, Lecturer, Heriot-Watt University, United Kingdom
 Zhixin Liu, Associate Professor, University of Michigan Dearborn, United States
 Xiangtong Qi, Associate Professor, Hong Kong University of Science & Tech, Hong Kong

We study the return policy design and pricing decisions for a seller who owns both online and offline channels. We show in the presence show-rooming, the allocation of the return cost plays a important role in mitigating such strategic consumer behavior.

051-0824 Competitive Cost Reduction Incentives and Spillover Learning

Jasper Veldman, Assistant Professor, University of Groningen, Netherlands
 Gerard Gaalman, Retired, University of Groningen, Netherlands

Operations managers can decide on how much to invest in cost reducing technologies, in anticipation of the decisions made by a rival firm manager and spillovers. We model a non-cooperative duopoly game and look at the structure of managerial incentives for cost reduction when spillovers are considered.

051-0809 Dynamic Pricing in the Presence of Social Learning and Strategic Consumers

Yiangos Papanastasiou, Student, London Business School, United Kingdom
 Nicos Savva, Assistant Professor, London Business School, United Kingdom

When a product of uncertain quality is first introduced to market, consumers may strategically delay their purchasing decisions in anticipation of the product reviews of their peers. We consider a monopolist operating in such an environment and compare between two alternative types of dynamic pricing policies, pre-announced and responsive.

051-0102 A Network Economic Game Theory Model of a Service-Oriented Internet with Price and Quality Competition

Sara Saberi, Student, Department of Operations and Information Management, United States

Anna Nagurney, Professor, University of Massachusetts Amherst, United States

Tilman Wolf, Professor, Department of Electrical and Computer Engineering, United States

This paper develops both a basic and a general network economic game theory model of a quality-based service-oriented Internet to study the competition among content and network providers. We provide equivalent variational inequality formulations. The results show the generality of the proposed network economic model for a future Internet.

125	Friday, 05:15 PM - 06:45 PM, International 2 Session: International Quality & Performance Measurement Chair(s): Basak Manders	Track: General Track
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051-1136 Efficiency and Effectiveness of Brazilian Export Consortia

Aletéia Carpes, Student, Federal University of Santa Maria, Brazil

Flavia Scherer, Professor, Federal University of Santa Maria, Brazil

Clandia Gomes, Professor, Santa Maria Federal University, Brazil

This study aims to analyze the efficiency of export consortia in Brazil regarding the cooperation of the members and the acquisition of innovations, in addition to effectiveness, as measured by export performance. We observed a low export performance, which may reflect the way that actions are being implemented.

051-1094 On Productivity Measurement of Sugarcane Cultivation in Brazil

Carlos Ernani Fries, Associate Professor, Federal University of Santa Catarina, Brazil

Terezinha Bezerra Albino Oliveira, Assistant Professor, Federal University of Alagoas, Brazil

Antonio Cezar Bornia, Associate Professor, Federal University of Santa Catarina, Brazil

Brazilian sugarcane industry makes use of advanced management techniques to enhance productivity and sustainability. In this sense, this work aims to identify best practices and factors that tend to influence productivity over a crop cycle of five years using data envelopment analysis and Malmquist total factor productivity index.

051-1129 The Global Impact of ISO 9001: A Meta-Analysis

Basak Manders, Student, Erasmus University Rotterdam, Netherlands

Henk de Vries, Associate Professor, Erasmus University Rotterdam, Netherlands

Kevin Linderman, Professor, University of Minnesota, United States

This study synthesizes research on the impact of ISO 9001 and extends it by testing several new hypotheses through meta-analytical techniques. The results show that ISO 9001 helps companies to improve their operational and marketing performance. Moreover, the economic status of a country and the national culture moderates these relationships.

051-0839 The Rural Transportation Problem in Brazil: Models and algorithms

Fatima Machado, Student, Univ Federal Do Minas Gerais, Brazil

Samuel Conceicao, Professor, Universidade Federal de Minas Gerais, Brazil

Ricardo Camargo, Professor, Univ Federal Do Minas Gerais, Brazil

Nilson Nunes, Professor, Univ Federal Do Minas Gerais, Brazil

Marcelo Porto, Associate Professor, Univ Federal Do Minas Gerais, Brazil

Allexandre Reis, Student, Univ Federal Do Minas Gerais, Brazil

João Flávio Almeida, Lecturer, Univ Federal Do Minas Gerais, Brazil

This paper proposes a Two-Echelon Capacitated Ring Star algorithm to solve the critical rural transportation problem in Brazil. The designation of vehicles that meet the need of students is required. The computational results show that the travel time and the cost per student can be significantly improved.

126	Friday, 05:15 PM - 06:45 PM, International 3 Session: Inventory & Vehicle Routing and Transportation Planning Chair(s): Wout Van Wezel	Track: Scheduling and Logistics
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051-0530 Intermodal Hinterland Network Design with Multiple Actors

Yann Bouchery, Eindhoven University of Technology, Netherlands

Jan Fransoo, Professor, Eindhoven University of Technology, Netherlands

This paper analyzes the implications of having multiple actors involved in most of intermodal hinterland supply chains. Both the behavior of the users and the objectives of the different network planners are taken into account in a hub location model. New theoretical results are derived and insights are proposed.

051-0462 Agent-Based Supply Chain Operational Strategies in a Dynamic Environment

Dmontier Aragão Júnior, Student, Universidade Federal De Santa Catarina, Brazil

Antonio Novaes, Professor, Federal University of Santa Catarina, Brazil

Mônica Maria Luna, Associate Professor, Federal University of Santa Catarina, Brazil

The use of agents in dynamic supply chain operations supports mutual collaboration among the participating vehicles when performing routing tasks. This paper compares different strategies, analyzing which ones allow reacting to dynamic events present in supply chain operations, and pointing out in which situations these strategies are most advantageous.

051-0236 A Tabu Search Algorithm for the Fleet Size and Mix Inventory Routing Problem

Haihong Xiao, Student, Hec Paris, France

Laoucine Kerbache, Professor, Hec Paris, France

Soumia Ichoua, Associate Professor, Embry-Riddle Aeronautical University, United States

A heuristic algorithm based on tabu search with an adapted intensification strategy has been proposed to solve the fleet size and mix IRP, consisting of define the frequency and quantity of delivery to each customer, the number of vehicles, and the routing of each vehicle.

051-0201 Cross-Organizational Collaboration of Freight Carriers: Empirical Analysis for Algorithmic Support

Wout Van Wezel, Assistant Professor, University of Groningen, Netherlands

Paul Buijs, Student, Rijksuniversiteit Groningen, Netherlands

Horizontal collaboration of freight carriers improves carrier load and decreases total mileage. The effect of horizontal collaboration on the tasks of transportation planners has not yet been investigated. We present empirical research in which we analyzed scheduling tasks and scheduling support of planners that incorporate collaboration in their daily tasks.

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Friday, 05:15 PM - 06:45 PM, International 4

Track: Behavior in Operations Management

Session: Human Behavior in Service Systems

Chair(s): Masha Shunko

051-0005 Diagnostic Accuracy Under Congestion

Francis De Vericourt, Associate Professor, INSEAD, France

Mirko Kremer, Assistant Professor, Penn State University State College, United States

We investigate decision-making and judgment in the context of diagnostic services systems that pose difficult trade-offs for the (human) server. For instance, in triage systems additional testing improves diagnostic accuracy for one patient, but increases congestion in the system (thus delaying service provision to other patients).

051-0082 Service Systems with Anecdotal Reasoning Customers

Tingliang Huang, Assistant Professor, University College London, United Kingdom

Ying-Ju Chen, Assistant Professor, University of California Berkeley, United States

The existing literature typically assumes that customers either perfectly know the expected waiting time or are able to form rational expectations about it. In contrast, in this paper we study canonical service models where customers do not have such full information or capability and use anecdotal reasoning to make decisions.

051-0998 Impact of Queueing System Design on Human Servers' Behavior

Masha Shunko, Assistant Professor, Purdue University, United States

Julie Niederhoff, Assistant Professor, Syracuse University, United States

Yaroslav Rosokha, Assistant Professor, Purdue University, United States

In queueing systems with human servers, service rate may depend on many factors. Based on series of lab and field experiments, we analyze the impact of queueing system setup and size, queue length, and observability on service speed and identify the most important drivers.

051-1158 Production Layout and Worker Speed

Julie Niederhoff, Assistant Professor, Syracuse University, United States

We study how the number of workers and the layout of production buffers affects worker performance.

128

Friday, 05:15 PM - 06:45 PM, International 5

Track: Supply Chain Contracting

Session: Supply Risk Management

Chair(s): Yimin Wang Paolo Letizia

051-0304 Risk Management: Performance Incentives and Business Insurance

Juan Serpa, Student, Sauder School of Business, Canada

Harish Krishnan, Associate Professor, University of British Columbia, Canada

Performance-Based-Contracts play a dual role: they incentivize manufacturers to invest in reliability, and also reduce the buyer's risk exposure. Why then do product buyers use business insurance to mitigate the risk associated with product failure? We show that business insurance helps the supply chain to coordinate reliability efforts more efficiently.

051-1206 Portfolio Selection of Fine Wine Futures and Bottles Under Weather and Market Risk

Mert Hakan Hekimoglu, Student, Syracuse University, United States

Burak Kazaz, Associate Professor, Syracuse University, United States

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

We investigate a distributor's portfolio selection problem of fine wine futures and bottles. Using Liv-ex.com data, we first predict the evolution of futures prices for young wines using changes in weather and market conditions. We then analyze the distributor's investments in futures, bottles, and cash position under a Value-at-Risk measure.

051-0943 Quality Control in an Export Processing System

Paolo Letizia, Assistant Professor, Erasmus University Rotterdam, Netherlands

Long Gao, Assistant Professor, University of California Riverside, United States

Export-processing is offshored production from developed countries. The majority of procurement contracts that are adopted for export-processing are flexible and do not specify product quality. Through contract theory we show that flexible contracts are preferred by the manufacturer when the product quality cannot be effectively communicated between the parties.

051-1210 Dealing with Uncertain Capacities in Decentralized Assembly Systems

Qingkai Ji, Student, Dalian University of Technology, China

Xiangpei Hu, Professor, Dalian University of Technology, China

Yunzeng Wang, Professor, University of California Riverside, United States

In a decentralized assembly system consisting of two components, we study how the suppliers should react when facing uncertain capacities, and whether the assembler should design contracts to encourage the suppliers to put more efforts (e.g. preventive maintenance) in reducing the uncertainties or just relentlessly set penalty for backorders.

129

Friday, 05:15 PM - 06:45 PM, International 6

Track: Service Operations*Session:* Hospitality Services*Chair(s):* Barry Cross**051-0185** Who Cares about Service Failures? A Comparative Study of Asian and Western Travelers in Various Classes

Xun Xu, Student, Washington State University Pullman, United States

We study the impact of flight delays as service operations failures on airline travelers' satisfaction. Empirical results demonstrate the negative impact of service failures is more significantly among Western travelers in economy class than all business class travelers. However, the failures don't impact the satisfaction of Asian economy class travelers.

051-0775 Cooperation Model between Hotels and Online Travel Agency

Yufeng Dong, Student, of China, China

Hotels seek to cooperate with online travel agencies (OTAs) to attract more customers. However, the commissions paid to OTAs are considerable. This paper explores when the hotel pauses the cooperation with OTAs in each sales period to maximize its occupancy rate as well as its revenue.

051-0965 Proposal of a Model for Restaurant Labor Shifts Scheduling

Carolina Luisa Vieira, Student, Federal University of Santa Catarina, Brazil

Carlos Eduardo Pimentel, Student, Sociesc - Educational Society of Santa Catarina, Brazil

Sergio Fernando Mayerle, Associate Professor, Federal University of Santa Catarina, Brazil

Mônica Maria Luna, Associate Professor, Federal University of Santa Catarina, Brazil

A key factor for successful service management lies in properly allocation employees. This work proposes an integer LP model for labor tour scheduling of an international chain restaurant located in Brazil. Results show evenly distributed shifts according to workers preferences, meeting shifts workload coverage and labor law restrictions.

051-0794 Service Operations Management Practices: Empirical Study in Oman's Hotel Industry

Asma Al-Zaidi, Assistant Professor, Sultan Qaboos University, Oman

Zainab Al-Balushi, Assistant Professor, Sultan Qaboos University, Oman

The purpose of this study is to conceptualize dimensions of operations management practices in managing service quality in hotels. In addition, it tests statistically the effect of the conceptualized dimensions on the performance of the hotel. The results have confirmed the conceptualized model and its effect on hotel performance.

051-0258 Leading Projects: Implementing Change in Service Organizations

Barry Cross, Lecturer, Queens University, Canada

All organizations have change agendas, involving the implementation of strategy. Service organizations, however, can experience challenges in this area, as they often have fewer resources and systems dedicated to projects. As a result, launches in service organizations can be Ad Hoc, resulting in missed objectives and underwhelmed customers.

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Friday, 05:15 PM - 06:45 PM, International 7

Track: Supply Chain Management*Session:* Sustainability in Supply Chain Management*Chair(s):* Greys Sosic Fang Tian**051-0313** Product Design, Coalitional Stability, or Cost Efficiency: A Network Perspective on EPR

Luyi Gui, Assistant Professor, University of California Irvine, United States

Atalay Atas, Associate Professor, Georgia Institute of Technology, United States

Ozlem Ergun, Associate Professor, Georgia Institute of Technology, United States

Beril Toktay, Professor, Georgia Institute of Technology, United States

Extended Producer Responsibility (EPR) is an environmental policy tool that mandates producers' financial responsibility for end-of-life treatment of their products. EPR has been regarded at its heart a policy to provide incentives for more environmentally-friendly design. We investigate the operational impact of collective EPR implementation on its product design outcome.

051-0743 Manufacturers' Competition and Sustainable Cooperation: Cost Structure and Stability Analysis

Fang Tian, Student, Marshall School of Business, United States

Greys Sosic, Associate Professor, Marshall School of Business, United States

Laurens Debo, Associate Professor, Booth School of Business, United States

We study a market with two substitutable and one independent product, in which recycling can be either manufacturers' responsibility or undertaken by the government. Each product can be made by a different firm, or one firm makes two independent products. We analyze conditions under which different products are recycled together.

051-1073 Take-Back Legislation: Consequences for Remanufacturing and Environment

Gokce Esenduran, Assistant Professor, Ohio State University, United States

Eda Kemahlioglu-Ziya, Assistant Professor, North Carolina State University, United States

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

We consider a manufacturer that sells new and remanufactured products under product take-back legislation. Adopting a life cycle analysis based approach, we identify how higher collection and reuse targets affect total environmental impact as well as environmental impact per economic welfare generated.

051-1306 The Impact of Supply Chain Structure on Responsible Sourcing

Robert Swinney, Associate Professor, Duke University Durham, United States

We analyze the impact of various aspects of supply chain structure on a firm (and industry's) incentives to source from socially responsible suppliers, i.e., suppliers that adhere to strict social and environmental responsibility standards and do not risk a potentially damaging (for the buyer) violation.

131	Friday, 05:15 PM - 06:45 PM, International 8 <i>Session:</i> Channel Structure Analysis and Design <i>Chair(s):</i> Jonathan Jackson	<i>Track:</i> Supply Chain Management
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051-0076 Impact of Risk Aversion on Price and Service Decisions under Different Channel Power Structures

Qinqin Li, Student, University of Science & Technology, China
Zhiying Liu, Professor, University of Science & Technology, China

This paper investigates price and service decisions of a supplier-retailer supply chain under demand uncertainty, in which players are both risk-averse decision-makers. We examine the impact of risk aversion of the players upon price and service decisions under three different channel power structures.

051-1190 Channel Structure Decisions for Competing Manufacturers Selling Asymmetrically Differentiated Products

Jonathan Jackson, Student, Washington State University Pullman, United States
Victor Shi, Associate Professor, Wilfrid Laurier University, Canada

Manufacturers must decide whether to sell directly to consumers or through an independent retailer. With two competing manufacturers, the decision is heavily dependent on product characteristics, and the form and strength of the competition. We expand on current literature by introducing asymmetrically differentiated products and examining different forms of competition.

051-1220 Retailer Channel Choice: Single Channel or Mixed Channel

peng zhang, Student, Southeast University, China
Yong He, Associate Professor, Southeast University, China

With the development of e-commerce, the retailers need to choose among the three kinds of channel structures: single offline channel, single online channel and mixed channel. We examine the game equilibrium solutions under these channel structures. We then compare the retailer profits and obtain the threshold of channel choice.

051-0028 Development of an Innovative Methodology for Analysis of Supply Chain Networks

Mohammad Mumtaz, Assistant Professor, Institute of Business Administration, Karachi, Pakistan
Kamran Chatha, Associate Professor, Lahore University of Management Sciences, Pakistan

This research modifies the value chain analysis (VCA) methodology by including elements that extend its application to the analysis of supply chain networks. The VCA approach is tested on a value chain network design problem in the dairy sector. Case study and action research are used in developing the methodology.

132	Friday, 05:15 PM - 06:45 PM, International 9 <i>Session:</i> Sustainable Operations <i>Chair(s):</i> Tim Kraft	<i>Track:</i> Sustainable Operations
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051-0013 Capacity Investment in Sustainable and Conventional Technologies

Mark Ferguson, Professor, University of South Carolina, United States
Shanshan Hu, Assistant Professor, Indiana University Bloomington, United States
Gilvan Souza, Associate Professor, Indiana University, United States
Wenbin Wang, Assistant Professor, Shanghai University, China

Motivated by the penetration of sustainable technologies, particularly in the energy sector, we study a firm's infrequent and irreversible strategic capacity investment in a portfolio of technologies that are used to meet stochastic demand. We derive closed-form solutions for the optimal investment and illustrate with real case studies.

051-0352 Converting a Supply Chain to Sustainable Practices

Vishal Agrawal, Assistant Professor, Georgetown University, United States
Deishin Lee, Assistant Professor, Harvard University, United States

We investigate the sourcing decisions of firms who want to source sustainably produced parts, e.g., organic ingredients, in order to offer environmentally friendly products. We examine how the firm's sourcing strategy and competition can influence the upstream supplier's decision to convert to a new sustainable processing standard.

051-0716 Safe Workplace and Operational Performance: Complementary or Conflicting Outcomes?

Mark Pagell, Professor, University College Dublin, Ireland
Robert Klassen, Professor, University of Western Ontario, Canada
David Johnston, Professor, York University, Canada
Anton Shevchenko, Student, York University, Canada
Sharvani Sharma, Student, York University, Canada

Much debate continues about whether worker safety must be sacrificed to achieve strong operational competitiveness. Using survey data matched with safety performance from 198 manufacturing facilities, we find that operational performance was not reduced by adopting safety best practices; and safety outcomes were not hurt by adopting operations performance.

051-0128 Assessing Vulnerability to Climate Change through Marginal Abatement Curves for Supply Chains

Anthony Craig, Lecturer, Massachusetts Institute of Technology, United States

We construct a greenhouse gas marginal abatement curve (MAC) specific to a supply chain by linking a Life Cycle Assessment model with a technology focused MAC. The resulting MAC may be useful for assessing the vulnerability of the supply chain to climate change related costs.

133	Friday, 05:15 PM - 06:45 PM, International 10 <i>Session:</i> Best Paper Award <i>Chair(s):</i> Nezh Altay	<i>Track:</i> Humanitarian Operations and Crisis Management
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051-0715 Factors Influencing the Collaboration Among Humanitarian Organizations: An Empirical Analysis

Mohammad Moshtari, Student, University of Lugano, Switzerland

This paper empirically investigates the drivers and barriers for collaboration among humanitarian organizations. It focuses on horizontal collaboration among international humanitarian NGOs, and sheds light on the significant factors influencing collaborative performance. It uses Partial Least Squares to examine the proposed hypotheses using a sample of 132 respondents.

051-0961 Sustainability for School Feeding Supply Chains: Cases of Critical Factors

Andreas Kretschmer, Student, Whu - Otto Beisheim School of Management, Germany

Stefan Spinler, Professor, Whu - Otto Beisheim School of Management, Germany

Luk Van Wassenhove, Professor, INSEAD, France

Program sustainability is an increasingly important issue for humanitarian logistics interventions. In this paper, we research school feeding supply chains to identify and validate critical factors for achieving program sustainability. Using a theoretical framework we analyze cases based upon primary and secondary data to derive hypotheses and practical insights.

051-0979 Fight or Flight: Modeling the Incident Controller's Problem

Natalie Simpson, Associate Professor, Suny At Buffalo, United States

James Minas, Research Fellow, Rmit University, Australia

The Incident Controller's problem is a complex integration of contrasting options, such as the activation of processes that influence (or 'fight') the hazard versus those that mitigate its influence. We relate the Incident Controller's problem to current OR literature, then propose and demonstrate improved axioms for its modeling.

051-0593 Global Vehicle Supply Chain Management in Humanitarian Operations

Jon Stauffer, Student, Indiana University, United States

Alfonso Pedraza-Martinez, Assistant Professor, Indiana University, United States

Luk Van Wassenhove, Professor, INSEAD, France

We use dynamic hub location models to investigate the vehicle supply chain of an International Humanitarian Organization. Using real data we obtain vehicle demand following the Haiti earthquake and multiple development programs. We show how temporary hubs in major disaster areas can balance costs and responsiveness in global supply chains.

134	Friday, 05:15 PM - 06:45 PM, International B	<i>Track:</i> Learning and Knowledge Management in OM
	<i>Session:</i> Conceptual Issues in KM and Learning - I	
	<i>Chair(s):</i> Jorge Rodriguez	

051-0042 Impact Modeling of Demographic Change on Industry Qualifications Framework (IQF)

Matthias Klumpp, Professor, FOM Hochschule, Germany

Hella Abidi, Student, FOM Hochschule, Germany

Sascha Bioly, Lecturer, FOM Hochschule, Germany

The purpose of this research is to explore the demographic change in Germany on the Industry Qualifications Framework (IQF) of the logistics industry. We aim to use the Industry Qualifications Framework (IQF) as an instrument to mitigate the ensuing lack of employability in the German and European logistics industry.

051-0159 A New Strategy in Knowledge Management

Kai Luo, Assistant Professor, KEDGE Business School, France

Sajjad Jasimuddin, Associate Professor, KEDGE Business School, France

In the knowledge economy, knowledge is the strategic resource for enhancing competitive advantage of organizations. This paper addresses the two different strategies based on the distinction between tacit and explicit knowledge, suggesting a hybrid approach as an appropriate mechanism for successful implementation of knowledge management initiative.

051-0592 Data Collection, Analysis and Tracking in Industry

Daniel Bumblauskas, Assistant Professor, University of Northern Iowa, United States

Herb Nold, Assistant Professor, Polk State University, United States

Paul Bumblauskas, President, PFC Services, Inc., United States

Modern organizations are inundated with vast quantities of data using processes developed in a past industrial era. More is not necessarily better, making it difficult to analyze meaningful and relevant data that leads to information and ultimately knowledge in time to matter. We will explore reasons for this condition.

051-1036 Toward an Articulation in the Quadruple Helix: Teaching and Research Linked to Higher Education Demand

Cesar Ortega, Student, UNIVERSIDAD NACIONAL AUTONOMA DE HONDURAS (UNAH), Honduras

Cintha Arteaga, Student, UNIVERSIDAD NACIONAL AUTONOMA DE HONDURAS (UNAH), Honduras

This research analyzes teaching and research from higher education suppliers and demanders, by interviewing 31 main associations of the quadruple helix (government, business, academia and society), and then using the MARCIAS tool for mapping actors, relations, chains, informants, applications and solutions. Results showed favorable opinions for holistic systems of relationships.

135	Friday, 05:15 PM - 06:45 PM, International C	<i>Track:</i> Supply Chain Risk Management
	<i>Session:</i> Computational Methods on Supply Chain Risk Management	
	<i>Chair(s):</i> Wolfgang Kersten	

051-0461 Transportation System Disruptions and their Impact on Supply Networks

Deyvid de Souza, Student, Federal University of Santa Catarina, Brazil

Ricardo Dávalos, Assistant Professor, Federal University of Santa Catarina, Brazil

Mônica Maria Luna, Associate Professor, Federal University of Santa Catarina, Brazil

Carolina Luisa Vieira, Student, Federal University of Santa Catarina, Brazil

Disruptions in transportation systems, like road congestion or terminal blockage, impact the flow of goods between supply chain tiers. This work analyzes such failures and their implications on delivery lead times of automobile parts supply from Brazil to Germany. A simulation model is applied using real-world data.

051-0670 Towards a Framework for Simulation and Studying Supply Chain Disruptions

Steve Melnyk, Professor, Michigan State University, United States

Christopher Zobel, Associate Professor, Virginia Polytechnic Institute And State University, United States

Stanley Griffis, Associate Professor, Michigan State University, United States

John Macdonald, Assistant Professor, Michigan State University, United States

This presentation lays out a framework for simulating and studying supply chain disruptions. This framework consists of three elements: (1) the disruption; (2) the supply chain ecosystem; and, (3) the policies. These elements are described and the procedure for using these elements to structure effective and meaningful experiments are described.

051-0814 Optimization of Sourcing Decisions Considering Risks in Short-term Project Networks

Bernd Koschate, Senior consultant, 4flow ag, Germany

Wolfgang Kersten, Professor, Hamburg University of Technology, Germany

Stefan Wolff, CEO, 4flow ag, Germany

Typically erecting wind farms is supplied by short-term project networks. Our research examines the question, how the evaluation of total landed costs including risk related costs can improve sourcing decisions and what process design this requires. Wind energy industry samples have been processed to derive a simulation based decision model.

051-0486 Design of Supply Chain Networks with Supply Disruptions using Genetic Algorithm

Raghda Taha, Student, Arab Academy for Science and Technology and Maritime Transport, Egypt

Amin El-kharbotly, Professor, Ain Shams University, Egypt

Yomna Sadek, Assistant Professor, Ain Shams University, Egypt

Nahid Afia, Professor, Ain Shams University, Egypt

Khaled Abdallah, Assistant Professor, Arab Academy for Science, Technology and Maritime Transport, Egypt

The design of a supply chain network subject to disruptions is tackled. A genetic algorithm with the objective of minimizing the design cost and regret cost is developed to achieve a reliable supply chain network. The improvement of supply chain network reliability is measured against the supply chain cost.

Sessions for Saturday, May 10

Saturday, 08:00 AM - 09:30 AM

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Saturday, 08:00 AM - 09:30 AM, A601

Track: OM Practice

Session: POMS Practice Leaders Semi Plenary Session: Health Care and Operations

Chair(s): Christopher Tang Felipe Caro

051-1442 Health Care and Operations

Kimberly Clemenson, N/A, Amgen, Inc., United States

Motz Feinberg, Executive Director, Supply Chain, Kaiser Permanente, United States

Representatives from Amgen, Inc. and Kaiser Permanente will present topics relevant to their industries. From Amgen, we will hear about the challenges of reliably producing high-quality drugs, while dealing with an ever-evolving manufacturing process. From Kaiser Permanente, we will hear about supply chain improvement efforts to increase efficiencies and to deal with the significant cost pressures of healthcare reform.

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Saturday, 08:00 AM - 09:30 AM, A602

Track: Purchasing and Supply Management

Session: Sustainability in purchasing and supply management

Chair(s): Richard Monroe

051-0882 Reverse Logistics of Post-Consumer: The Case of a Metallurgical Industries in the State of Mato Grosso do Sul

José Renato da Silva Lucena, Professor, UFGD, Brazil

Antonio Carlos Vaz Lopes, Student, UFGD/UNINOVE, Brazil

Sergio Adelar Brun, Student, UTFPR, Brazil

The goal is to demonstrate the process of reverse logistic in a metallurgical organization. The data were obtained through interviews, documentary analysis and direct observation. The company recycles and reuses that collaborates with the preservation of the environment, reduces waste and generates revenues that would not occur with disorganized disposal.

051-1023 Sustainable Supply Chain Business Practices

Richard Monroe, Associate Professor, East Carolina University, United States

The interest in sustainable supply chain business practices has grown among many national and international organizations as well as corporations worldwide. The application of sustainable supply chain business practices is based on standards or guidelines from various sources. This paper will discuss dominant practices by drawing upon brief case studies.

051-1160 Key Challenges in Implementing Sustainable Procurement through E-Procurement - A Grey-DEMATEL Approach

Ramkumar Maria Arputham, Student, Indian Institute of Technology Kharagpur, India

Mamata Jenamani, Associate Professor, Indian Institute of Technology Kharagpur, India

Utilizing e-procurement effectively will help overcome challenges in implementing sustainable procurement program. To help advance research on sustainability through e-procurement, this paper uses multi-site field study data with a novel grey-based DEMATEL approach to visualize the structure of complicated causal relationships between the key challenges in implementing sustainable procurement program.

051-1430 Buyer-Supplier Relationships and the effect of Power Balance on Innovative Knowledge Exchange

Sherwat Elwan Ibrahim, Associate Professor, German University in Cairo, Egypt

Hebatollah Morsy, Student, German University in Cairo, Egypt

Companies seeking higher levels of innovation have focused on ways to advance Buyer-Supplier relationships in terms of knowledge exchange. Building from theories of Transactional Cost and Social Exchange this paper proposes a theoretical framework indicating that only under a balanced power position will the actual innovative knowledge exchange take place.

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Saturday, 08:00 AM - 09:30 AM, A702

Track: Empirical Research in Operations Management

Session: Empirical Research on Product Recalls

Chair(s): George Ball

051-1293 Is Task-Switching Always Bad? Unraveling Task-Switching Behavior

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

Morgan Swink, Professor, Texas Christian University, United States

Elliot Bendoly, Associate Professor, Emory University, United States

Literature on task-switching behavior shows that "monitored" task-switching lowers employee productivity. Using experimental data, we show that 1) "voluntary" task-switching also lowers productivity; 2) employees "scope" their environment for available options, but do not always switch; 3) such scoping behavior provides short-term performance gain but hurts in the long-term.

051-0978 Contract Manufacturing and Quality Risk

John Gray, Assistant Professor, Ohio State University, United States

Aleda Roth, Professor, Clemson University, United States

Brian Tomlin, Associate Professor, Dartmouth College, United States

In this paper, we develop theoretical arguments about whether and when contract manufacturers will operate with higher quality risk than internal plants, ceteris paribus. We empirically test our hypotheses.

051-1164 Leading Indicators of Recalls in the United States Pharmaceutical Market: An Empirical Investigation

George Ball, Student, University of Minnesota, United States

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

The ever-present threat of generic drug replacements in the pharmaceutical market may create an environment which focuses too heavily on efficiency at the expense of product performance. We identify important leading indicators of pharma recalls in the United States using a unique panel data set covering years 2002-2012.

051-1054 Predicting High Technology Innovation Failures: Application of Predictive Analytics to Big Data on Market Fail
 Ujjal Mukherjee, Student, University of Minnesota, United States
 Kingshuk Sinha, Professor, University of Minnesota, United States

In this paper we develop a predictive model that can ex ante estimate the hazard of innovation failure under different product and market conditions. The central question that serves as the motivation for this paper is: Can user level feedback related to episodic market failures predict product level innovation failures?

140	Saturday, 08:00 AM - 09:30 AM, A703 <i>Session:</i> Empirical Research on Adoption of Sustainable Practices <i>Chair(s):</i> Rick Hardcopf	<i>Track:</i> Sustainable Operations
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051-0034 Save the Environment or Strive for Legitimacy - Motives for Adopting Environmental Practices in Manufacturing
 Rick Hardcopf, Student, University of Minnesota, United States

Ensuring manufacturers are good shepherds of the environment is a key objective of government regulation. But, is regulation the primary reason manufacturers adopt Environmental Management Practices (EMP's)? In an empirical study, we evaluate the role of efficiency and institutional effects in a manufacturers decision to adopt EMP's.

051-1039 Determinants of Sustainable Practices in Supply Chain Management
 Etienne Abdala, Assistant Professor, Fundacao Getulio Vargas, Brazil
 Jose Barbieri, Associate Professor, Fundacao Getulio Vargas, Brazil

This paper's goal is to analyze the external and internal pressures that lead organizations to adopt sustainable practices in to supply chain management. The data collected by a research conducted in 131 organizations were analyzed through a CFA method. The results suggest that internal factors exercise influences on sustainable practices.

051-0248 A Contingent View on Effectiveness of Cross-functional Collaboration for Environmental Practices Adoption
 Anwar Alsheyadi, Student, Nottingham University , United Kingdom
 Luc Muyldermans, Associate Professor, Nottingham University , United Kingdom
 Katri Kauppi, Assistant Professor, Aalto University, Finland

The role of cross-functional collaboration (CFC) for effective adoption of environmental practices has been recognized in the literature. However, previous empirical studies have ignored the moderating effects of firm contingencies on CFC-->environmental practices adoption link. This study aims to address this gap using a survey data of 138 Omani firms.

141	Saturday, 08:00 AM - 09:30 AM, A704 <i>Session:</i> Retail Operations - Nanostores Tutorial <i>Chair(s):</i> Jan Fransoo Edgar Blanco	<i>Track:</i> Retail Operations Management
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051-0018 Nanostores in Megacities - Tutorial
 Edgar Blanco, Professor, Massachusetts Institute of Technology, United States
 Jan Fransoo, Professor, Eindhoven University of Technology, Netherlands

We outline the concept and characteristics of nanostores as a dominant retail channel in megacities. We list challenges that exist in supplying and selling to nanostores, provide illustrative examples, and identify research opportunities.

142	Saturday, 08:00 AM - 09:30 AM, A705 <i>Session:</i> Designing Healthcare Organizations <i>Chair(s):</i> Henk Akkermans	<i>Track:</i> Healthcare Operations Management
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051-0453 Healthcare Process Discovery and Visualization
 Rahul Basole, Associate Professor, Georgia Institute of Technology, United States
 Mark Braunstein, Professor, Georgia Institute of Technology, United States
 Duen Horng Chau, Assistant Professor, Georgia Institute of Technology, United States
 Myung Choi, Senior Research Engineer, Georgia Institute of Technology, United States
 Vikas Kumar, Student, Georgia Institute of Technology, United States
 Burt Lesnick, Director of Medicine, Pediatric Pulmonology, Children's Healthcare of Atlanta, United States
 Nicoleta Serban, Associate Professor, Georgia Institute of Technology, United States
 Michael Thompson, Director of Business Intelligence, Children's Healthcare of Atlanta, United States

Healthcare processes are complex activities that span organizational, spatial, and temporal boundaries. Systemic insights are consequently difficult to achieve. Our research develops a data-driven methodology, fusing systems modeling, data mining, and visualization, to identify, describe, and visualize healthcare processes. We illustrate our methodology with a case study in pediatric healthcare.

051-0711 Investigating Supply Chain Shared Service Organizations in Healthcare
 Yousef Abdulsalam, Student, W.P. Carey School of Business, United States
 Mohan Gopalakrishnan, Associate Professor, W.P. Carey School of Business, United States
 Arnold Maltz, Associate Professor, W.P. Carey School of Business, United States
 Eugene Schneller, Professor, W.P. Carey School of Business, United States

In this paper we examine the shared service organizations (SSOs) set up to manage operational complexities inherent to healthcare supply chains. Through a case-study approach we examine the variances in strategies leading to a range from "decoupling" the supply chain function from the parent organizations to "managed distancing" through outsourcing.

051-1351 Care and Cure: Compete or Collaborate? Improving Inter-Organizational Designs in Healthcare

Angele Pieters, Guest Researcher, Tilburg University, Netherlands
Kim van Oorschot, Associate Professor, BI Norwegian Business School, Norway
Henk Akkermans, Professor, Tilburg University, Netherlands
S.C. Brailsford, Professor, University of Southampton, United Kingdom

This paper investigates performance impacts of different organizational designs in healthcare. It investigates three linked research questions: What problems are encountered with certain designs, what are the root causes, and how can it the designs improved. Based on our mixed method research we inductively derive four propositions regarding inter-organizational designs.

143 Saturday, 08:00 AM - 09:30 AM, A706
Session: Healthcare Supply Chains
Chair(s): David Zepeda

Track: Healthcare Operations Management

051-0899 Enhancing Data Consistency and Inventory Efficiency with GTIN Adoption in Healthcare Supply Chains

Gilbert Nyaga, Associate Professor, Northeastern University, United States

Data standardization in US healthcare sector facilitates inventory visibility and enhance supply chain efficiency. However, many hospitals are yet to adopt such standardization. This study examines mismatch in inventory identification in a major hospital and how GTIN use impacts the hospital's inventory cost. Results have important theoretical and managerial implications.

051-0860 Public Healthcare Logistics and Supply Chain Management (SCM): Why is it so Difficult to Optimize Operations?

Alcibiades Guedes, Professor, Faculty of Engineering, University of Porto, Portugal

This paper describes three case studies of Logistics and Supply Chain optimization in public primary care networks and public hospitals and demonstrates the relevant role of Logistics and SCM in the simultaneous improvement of service levels and efficiency, so necessary to this industry. Opportunities, difficulties and key learnings are identified.

051-0474 On Risk Management in Supply Chains: An Empirical Analysis of Inventory Management in Hospital Operations

David Zepeda, Assistant Professor, Northeastern University, United States
Gilbert Nyaga, Assistant Professor, Northeastern University, United States
Gary Young, Professor, Northeastern University, United States

We empirically examine supply chain risk management in hospital operations. Results show that hospital operations tend to buffer from supply chain risk through increases in inventory and that risk mitigating supply chain strategies show promise in reducing the impact of supply chain risk on hospital inventory.

144 Saturday, 08:00 AM - 09:30 AM, A707
Session: Specific Applications: Simulations and Networks
Chair(s): Zoran Perunovic

Track: Product Innovation and Technology Management

051-0108 Innovation Networks in the Maritime Industry

Zoran Perunovic, Associate Professor, Technical University of Denmark, Denmark
Sofia Furstenberg, Innovation Portfolio Manager, A.P.Moller Maersk Group, Denmark
Mads Christoffersen, Associate Professor, Technical University of Denmark, Denmark

Innovation models in the maritime industry have evolved from the push and pull to more advanced networked models. We explore formation, structure, management, and performance of different types of networks and propose successful models for networked innovation in the maritime industry.

051-0596 Simplified Building Simulation Tool Applied in the Early Stages of Building Design and Energy Labeling

Mauricio Lopes, Assistant Professor, Universidade Federal De Santa Catarina, Brazil
Lucila Campos, Associate Professor, Universidade Federal De Santa Catarina, Brazil
Roberto Lamberts, Associate Professor, Universidade Federal De Santa Catarina, Brazil

This paper describes a simplified building simulation tool developed for evaluating the energy efficiency of commercial buildings according to the Brazilian labeling program. The paper describes the tool and also evaluates its potential when introduced into the design process of the efficient buildings.

051-1387 Simulating Experiments on Methods of Knowledge Acquisition and Innovation Performance for KIBS Firms

Qi Gao, Student, Tongji University, China
Xinghui Lei, Professor, Tongji University, China

Knowledge-intensive-firms in China have been taken as research objectives and an agent-based model has been applied to show some simulating experiments on knowledge and innovation management. To focus upon the behaviors of innovation agents, we analyze the impact of knowledge acquisition, technical and innovative strategy on the innovation performance.

145 Saturday, 08:00 AM - 09:30 AM, A708
Session: Topics in Revenue Management
Chair(s): Nishant Mishra

Track: Revenue Management and Pricing

051-0866 A Model for Competition in Network Revenue Management

Nishant Mishra, Assistant Professor, Rotterdam School of Management, Netherlands

We study a model of competition in network revenue management where multiple risk-averse players compete to satisfy uncertain consumer demand. For a linear inverse demand function, and for a symmetric game, we can come-up with closed form expressions for equilibrium quantities and prices, and we also establish some monotonicity properties.

051-0918 Can a Third-Party Profitably Sell Airline Ticket Options?

Niels Agatz, Assistant Professor, Rotterdam School of Management, Netherlands
Nishant Mishra, Assistant Professor, Rotterdam School of Management, Netherlands

Patrick Van Kempen, Student, Rotterdam School of Management, Netherlands

In recent years, several airlines have started to allow potential travelers to 'lock in' the ticket price for up to seven days by paying a small fee. In this research we empirically investigate whether it is viable for a third-party to profitably sell such 'option' products on airline tickets.

051-0938 Bid Prices for the Network Revenue Management Problem with Non-Parametric Choice Models

Marco Bijvank, Assistant Professor, Rotterdam School of Management, Netherlands
Alwin Haensel, PhD, Haensel AMS, Germany

One of the main issues in revenue management involves deciding which products to offer customers during the booking horizon. We develop new efficient methods to compute bid prices, where we include two trends: customers request products according to non-parametric choice models with overlapping consideration sets and bid prices change over time.

051-1026 Customer Behavior Modeling Using a Global Optimization Method for Demand Forecasting in Revenue Management

Shadi Sharif Azadeh, Lecturer, Polytechnique Montreal, Canada
Gilles Savard, Professor, Polytechnique Montreal, Canada

In this research, we propose an optimization mathematical model to estimate the demand of each product at a given time as well as the product utilities for customers arriving from different segments. We introduce an algorithm that takes availability constraints into account via a non-parametric mathematical representation.

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Saturday, 08:00 AM - 09:30 AM, M101
Session: Economics of Information Systems - III
Chair(s): Yifan Dou

Track: Information Systems

051-0507 Dyads' Learning-by-Working-Together after Information Systems Implementation

Tianshi Wu, Assistant Professor, Harbin Institute of Technology, China
Chris Forman, Professor, Georgia Institute of Technology, United States
Sridhar Narasimhan, Professor, Georgia Institute of Technology, United States
Sandra Slaughter, Professor, Georgia Institute of Technology, United States

Information systems implementation may lead to significant changes in tasks performed by dyads. In this study, we demonstrate how a dyad's experience working together influences its task performance after the implementation of an information system, and how the influence varies across tasks with different levels of goal conflict and complexity.

051-0520 Dynamics among Social Media Marketing, Word of Mouth, and Movie Revenues

Hailiang Chen, Assistant Professor, City University of Hong Kong, Hong Kong

Social media sites have recently become a venue for firms to interact with consumers and influence their conversations. This study explores how firms could influence word-of-mouth (WOM) among consumers through proactive social media marketing efforts. The dynamics among movie studios' marketing communication, consumer-to-consumer communication, and box office sales are examined.

051-1011 Coordination between a Manufacturer and a Service Provider in Presence of Exchange-old-for-new Programs

Yongbo Xiao, Associate Professor, Tsinghua University, China
Yifan Dou, Assistant Professor, Beihang University, China

We consider one manufacturer and one service provider, who sell a product and a service package respectively to a common base of customers. By considering two forms of exchange-old-for-new programs, the optimal pricing decisions are studied and a coordination contract is proposed to improve the overall performance.

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Saturday, 08:00 AM - 09:30 AM, M102
Session: Advances in Inventory Management
Chair(s): Xiajun Pan Dorothee Honhon

Track: Inventory Management

051-0250 Repairables Stocking and Sourcing in Multi-Location Environments: An Analytical and Experimental Study

Izack Cohen, Assistant Professor, Technion Israel Institute of Technology, Israel
Morris Cohen, Professor, University of Pennsylvania, United States
Elad Landau, PMO, other, Israel

We develop inventory management policies for two-echelons, N locations environments. The presented model differs from standard multi-echelon repairable models since decisions are not limited to stocking (e.g. stock level and its allocation) but also include repair sourcing decisions. We present analytical results, solution algorithms and an extensive numerical study.

051-1259 Allocation Policies in the Transshipment of Blood Inventories

Anand Paul, Associate Professor, University of Florida, United States

We derive analytical properties of a stochastic multiple period model to optimize the distribution of blood products from a regional blood bank to local depots serving hospitals. We supplement our analysis with simulation results using one year's worth of real data.

051-1313 Completing Rosling's Optimal Policy Description for Assembly Systems

Shaokuan Chen, Student, University of Texas Dallas, United States
Alp Muharremoglu, Associate Professor, University of Texas Dallas, United States
Ganesh Janakiraman, Professor, University of Texas Dallas, United States
Tim Huh, Associate Professor, University of British Columbia, Canada

We study an assembly system, for which Rosling (1989) characterized the optimal policy, assuming that the initial state of the system possesses a certain property referred to as "long-run balance". We characterize the optimal policy starting with any arbitrary initial state, thereby completing the optimal policy description.

051-1340 Dynamic Pricing, Production, and Channel Coordination with Stochastic Learning

Xiuli He, Assistant Professor, University of North Carolina Charlotte, United States
 Tao Li, Assistant Professor, Santa Clara University, United States
 Suresh Sethi, Professor, University of Texas Dallas, United States

We consider a decentralized two-period supply chain in which a manufacturer produces a product and sells it through a retailer facing a price-dependent demand. We assume that the manufacturer's second-period production cost declines linearly in the first-period production, but with a random learning rate.

150	<p>Saturday, 08:00 AM - 09:30 AM, M104 <i>Track: Marketing and OM Interface</i></p> <p><i>Session:</i> Operations/Marketing Interface: Emerging Research Issues</p> <p><i>Chair(s):</i> Rohit Verma</p>
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051-0285 Operations/Marketing Interface: Emerging Research Issues
 Rohit Verma, Professor, Cornell University, United States
 Mark Ferguson, Professor, University of South Carolina, United States
 Nitin Joglekar, Associate Professor, Boston University, United States
 Bo van der Rhee, Associate Professor, Nyenrode University, Netherlands
 Glen Schmidt, Professor, University of Utah, United States

The purpose of this panel is to discuss the contemporary and emerging research issues related to marketing - operations interface. Discussion themes will include product/service design and development, revenue management, servitization, sustainability, quality/process improvement and other related topics.

151	<p>Saturday, 08:00 AM - 09:30 AM, M106 <i>Track: OM and Economic Models</i></p> <p><i>Session:</i> OM and Economic Modeling in Practice and Beyond</p> <p><i>Chair(s):</i> Chia-Ching Chou</p>
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051-0336 Evaluating the Values of IT and EC Separately and Jointly and the Performance of U.S. Business Organizations
 Winston Lin, Professor, SUNY at Buffalo, United States
 Chia-Ching Chou, Student, SUNY at Buffalo, United States

IT and EC have been discussed for years, yet virtually all studies focus only on the value of IT or that of EC separately. Based on theory of production and CES-based stochastic production frontier approach, this study proposes to empirically evaluate the values of IT and EC separately.

051-0115 Value of Reverse Factoring in Multi-stage Supply Chains
 Hande DEKORTE, Student, Eindhoven University of Technology, Netherlands
 Fehmi Tanrisever, Assistant Professor, Bilkent University, Netherlands
 Matthew Reindorp, Assistant Professor, Eindhoven University of Technology, Netherlands
 Jan Fransoo, Professor, Eindhoven University of Technology, Netherlands

This work shows how the value of reverse factoring results from, and is conditioned by the spread in external financing costs, the operating characteristics of the supplier, including the implied working capital policy, and the risk-free interest rate within a supply chain.

051-1224 Investigation of Bidder Asymmetry in Japanese Electric Power Procurement Auction
 Shigeharu Okajima, Assistant Professor, Waseda University, Japan
 Hiroko Okajima, Assistant Professor, Towson University, United States

This paper investigates the differences in the bidding patterns between incumbents and entrants in Japanese electric power procurement auctions. We analyze Japanese electric power auction data to examine bidder asymmetry, which potentially reduces competition as shown in auction theory. We find that strong bidders change depending on types of auctions.

051-0039 Working Capital and Profitability-Establishing the Causality
 Tapan Bagchi, Retired, NMIMS Shilpur, India

Financial performance of manufacturing, trading and service firms often indicates a negative correlation between working capital and net operating profitability (NOP). This study sets up a first-principles model and statistical experiments to show that in reality there is no exclusive causality between WC and NOP; it depends on various costs.

152	<p>Saturday, 08:00 AM - 09:30 AM, International 2 <i>Track: General Track</i></p> <p><i>Session:</i> Competition, Strategy & Investment</p> <p><i>Chair(s):</i> Jeffrey Petty</p>
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051-0146 Assessment of Competitive Distance Among Companies in the Ground Coffee Producing Sector
 Milton Vieira Junior, Professor, Universidade Nove De Julho, Brazil
 Wagner Lucato, Professor, Universidade Nove De Julho, Brazil
 Sergio Bortoleto, Student, Universidade Nove De Julho, Brazil
 Valéria Andrade, Student, Universidade Nove De Julho, Brazil

Brazilian ground coffee producing sector is exposed to fierce competition, specially the cooperatives which are required to face new challenges and competitive strategies. This paper aims to assess the competitive distance among the 5 best coffee cooperatives in order to identify which are the main existing competitive differentials adopted.

051-0500 A Model On Problem Escalation
 Bo Li, Student, Texas A&M University College Station, United States

Organizations employ escalation policy to route different types of problems to problem-solvers for resolution. We examine the choice of cost-minimization policy with single- and multi- problem-types and various probability distributions of problem-resolution time. We show that specifying time-limits on each escalation level may reduce overall cost.

051-0691 Venture-Capital Investment in the Manufacturing Sector

Jeffrey Petty, Assistant Professor, Universite De Lausanne, Switzerland

The manufacturing strategy literature argues that manufacturing is a source of competitive advantage and that innovation is linked to manufacturing, yet the manufacturing sector attracts only minor interest from venture capitalists. We use historical data to illustrate how the venture-capital cycle increasingly biases the location decision toward outsourcing.

153	<p>Saturday, 08:00 AM - 09:30 AM, International 3</p> <p>Session: Dispatching and Shipping</p> <p>Chair(s): Burcu Keskin</p>	<p>Track: Scheduling and Logistics</p>
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051-1325 Effective Truckload Dispatch Decision Methods when Advanced Service Demand Information is Incomplete

Hossein Zolfagharinia, Student, Wilfrid Laurier University, Canada
Michael Haughton, Professor, Wilfrid Laurier University, Canada

One source of improved profitability for truckload freight carriers is advanced knowledge of detailed client demand. We quantify the profit improvement by using mixed integer programming (MIP) to model dynamic truckload transportation operations. The MIP model, along with an effective approach to handle incomplete knowledge are the study's major contributions.

051-1106 An Online Optimization Approach for Outbound Logistics with Common Carriers

Ibrahim Capar, Student, University of Alabama Tuscaloosa, United States
Burcu Keskin, Assistant Professor, University of Alabama Tuscaloosa, United States

For an outbound logistics system with unknown future orders, we develop an integer programming based online optimization model to minimize system-wide costs while considering order consolidation opportunities and due dates of orders. Transportation with common carriers, dynamic demand, and limited inventory are some challenging aspects.

051-0930 More or Better: Extra Board Scheduling for Rail Dispatchers

Anthony Craig, Lecturer, Massachusetts Institute of Technology, United States

Rail dispatcher scheduling involves filling a fixed number of uniquely qualified positions. Unplanned absences must be filled through scheduled extra board employees or costly overtime. We analyze historical absences and use simulation to explore the tradeoff between increased extra board workers and better qualified employees.

051-0273 The Study Case Applied about the Impact of Eletronic Scheduling on Management by Multimodal Transport

Washington Luiz Soares, Student, UNISANTA - UNIVERSIDADE SANTA CECÍLIA, Brazil
Getulio Akabane, Student, FATEC, Brazil
Hamilton Pozo, Student, Faccamp - Faculdade Campo Limpo Paulista, Brazil

The management to control the lead time depends of operational situation by railway's client who needs find out the shorter lead time as from the key performance indicators to management sustainable logistic. The study case in focus of research is the hold time for assembly of express trains of containers.

051-0070 Simulation and Mixed Integer Programming Optimization for Manufacturing and Transportation Scheduling

Can Celikbilek, Student, Ohio University, United States
Bulent Erenay, Student, Ohio University, United States

A simulation model is developed along with a mixed integer programming approach in a cellular manufacturing system (CMS) for joint optimization of manufacturing scheduling and transportation mode selection decisions. The objective of this research is to maximize the total profit for a company.

154	<p>Saturday, 08:00 AM - 09:30 AM, International 4</p> <p>Session: Project Management</p> <p>Chair(s): Enno Siemsen</p>	<p>Track: Behavior in Operations Management</p>
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051-0657 Initiating and Sustaining Supplier Involvement in Development Projects: Behavioral Aspects in Contract Design

David Wuttke, Student, Ebs Business School, Germany
Karen Donohue, Associate Professor, University of Minnesota, United States
Enno Siemsen, Associate Professor, University of Minnesota, United States

Using a combination of analytical models and laboratory experiments, we study the effectiveness of buyer contract mechanisms, including breach penalties and reward contracts, on incentivizing product innovation at the supplier level. Our results provide insight into how the mechanisms can be altered to better account for supplier-specific behavior.

051-0727 How Many Teams are Too Many? Turnover Matters

Hise Gibson, Student, Harvard University, United States
Brad Staats, Professor, University of North Carolina Chapel Hill, United States
Ananth Raman, Professor, Harvard University, United States

Project management is a critical driver of improvement. Team composition is fundamental to the success of a project. Using U.S. government data for over 1500 construction projects outside the continental U.S., we study the impact of multiple team membership on project completion time.

051-1084 Optimism Bias in Project Planning

Yael Grushka-Cockayne, Assistant Professor, University of Virginia, United States

We improve the accuracy of the existing measures of cost optimism bias for capital and infrastructure projects in the UK. We provide estimates of historic deviations and an analysis of the drivers for the differences between actual and anticipated costs of projects, resulting in more robust measures of optimism bias.

051-1154 Some Consequences of Deadline Rush

Kenneth Doerr, Associate Professor, Naval Postgraduate School, United States
David Nembhard, Associate Professor, Penn State University State College, United States

Deadline rush is the behavioral response to deadlines such as project milestones. We explore some of the consequences of Deadline Rush on throughput. We show that individual differences in deadline reactivity make a significant difference in setting deadlines, quota-based systems, and task-sharing on a conjunctive task.

155	<p>Saturday, 08:00 AM - 09:30 AM, International 5</p> <p><i>Track:</i> Supply Chain Contracting</p> <p><i>Session:</i> Collaboration and Procurement in Supply Chains</p> <p><i>Chair(s):</i> Guillaume Roels</p>
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051-0216 Does Dual Sourcing Pay-off on Perishable Food Supply chains?

Pedro Amorim, Lecturer, INESC-TEC, Faculdade de Engenharia da Universidade do Porto, Portugal
 Ana Barbosa-Póvoa, Professor, CEG-IST, Instituto Superior Técnico, Universidade de Lisboa, Portugal
 Ignacio Grossmann, Professor, Carnegie Mellon University, United States
 Bernardo Almada-Lobo, Assistant Professor, INESC-TEC, Faculdade de Engenharia da Universidade do Porto, Portugal

This presentation addresses an integrated framework for supplier selection and tactical production-distribution planning of perishable food supply chains. We are especially concerned with the option of producing with local or mainstream raw materials. The type of sourcing clearly impacts the trade-off between expected profit and customer service.

051-0975 Two-Sided Outsourcing: Contracting Capacity Transfers

Guillaume Roels, Assistant Professor, University of California Los Angeles, United States
 Christopher Tang, Professor, University of California Los Angeles, United States

Considering two firms that share their respective production capacity, we study how smart contracting can result in win-win outcome over simple bargaining.

051-0981 Capacity Investment and Management for Joint Ventures

Philippe Chevalier, Professor, Université Catholique De Louvain, Belgium
 Guillaume Roels, Assistant Professor, University of California Los Angeles, United States
 Ying Wei, Assistant Professor, Jinan University, China

Many Joint Ventures are created to share a fixed investment cost. Such investments have generally a long horizon over which there is a significant uncertainty in demand. We show that the way firms plan to manage the capacity has strong implications on the investment process.

051-0986 Group Buying Platforms: Leveraging the Crowd Effect in the virtual World

Constantin Blome, Professor, Université Catholique De Louvain, Belgium
 Philippe Chevalier, Professor, Université Catholique De Louvain, Belgium
 Liang Lu, Lecturer, Heriot-Watt University, United Kingdom

Based on empirical insights we analyze how social interactions among customers influence the contracting of group buying platforms. We specifically examine the role of two social effects for coordinating the supply chain: the word-of-mouth effect and the crowd effect.

156	<p>Saturday, 08:00 AM - 09:30 AM, International 6</p> <p><i>Track:</i> Service Operations</p> <p><i>Session:</i> Managing service employee performance</p> <p><i>Chair(s):</i> Jason Miller</p>
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051-0492 How Do Service Operators Respond to "Big Brother"?

Jason Miller, Student, Ohio State University, United States
 Johnny Rungtusanatham, Professor, Ohio State University, United States

Will e-monitoring of remote service personnel lead to higher turnover? We synthesize competing theoretical perspectives to provide an answer to this question. We test this synthesized perspective with data from both primary and secondary data sources.

051-0538 Service environment: a new dimension for servant company

Kleber Nobrega, Professor, Universidade Potiguar, Brazil
 Raquel Nobrega, Student, Universidade Potiguar, Brazil

Servant company structure involves behavior, leadership, strategy, culture, processes and products. What if there is no planning on facilities? Service performance may fail substantially. Recent researches appoint for a new and complementary dimension: service environment, including facilities, equipment, material, layout, sound and odor, information and system

051-0850 The Way Lawyers Perceive their Service Offer

Kleber Nobrega, Professor, Universidade Potiguar, Brazil
 Klevellando Santos, Professor, Universidade Potiguar, Brazil
 Cintia Barreto, Professor, Universidade Potiguar, Brazil

Lawyer services do not use to be clearly identified. This article assesses the understanding of lawyers on their service offering. Results indicate a lack of perception in relation to the amount of services provided, and they do not use an appropriate methodology for identifying and planning their services

051-0635 Improving Call Center Operations in Healthcare

Sanjeev Bordoloi, Associate Professor, University of St. Thomas, United States

Healthcare organizations face with several challenges keeping up with patient satisfaction. Hospital call centers play a critical role in setting patient satisfaction scores. We studied a hospital that is facing challenges in their call center operations. The goal is to improve overall service delivery leading to improvement in patient satisfaction.

158	<p>Saturday, 08:00 AM - 09:30 AM, International 8</p> <p><i>Track:</i> Supply Chain Management</p> <p><i>Session:</i> Supply Chain Analysis and Design</p> <p><i>Chair(s):</i> Laird Burns</p>
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051-0869 Towards Automated Access to Supply Chain Analyses

Timothy Sprock, Student, H. Milton Stewart School of Industrial & Systems Engineering, United States
Leon McGinnis, Emeritus Professor, H. Milton Stewart School of Industrial & Systems Engineering, United States

To provide automated access to multiple analysis tools, such as discrete event simulation, we apply model-based systems engineering (MBSE) methodologies to construct a SCOR®-based supply chain reference architecture using OMG SysML™. From the conceptual model, we formulate reusable transformations and then demonstrate the methodology to generate simulations of inventory models.

051-1121 Electrical Energy Supply Chains: Analytics Reduce Peak Demand and System Costs while Improving Capacity

Laird Burns, Assistant Professor, University of Alabama Huntsville, United States
Wes Colley, Lecturer, University of Alabama Huntsville, United States

Using a novel algorithm, advanced analytics and telecommunication technology, we demonstrate how targeted customer segments can profitably reduce peak electrical demand for a major electrical utility, reducing current cost and future investments while increasing capacity and lowering total system cost. Our approach is now being implemented by the utility.

051-0807 The Multi-Item Transshipment Problem with Fixed Transshipment Costs

Reut Noham, Student, Tel Aviv University, Israel
Michal Tzur, Professor, Tel Aviv University, Israel

We consider systems with two retailers and multi items in which lateral transshipments, incurring fixed costs, are allowed. We develop optimality conditions that maximize the total centralized expected profit, and a simple heuristic which performs well. We show that the profit per item increases with the number of items considered.

051-0075 Comprehensive Tactical Supply Chain Planning under Supplier Uncertainty

Aly Megahed, Student, Georgia Institute of Technology, United States
Marc Goetschalckx, Associate Professor, Georgia Institute of Technology, United States

We develop a two-stage stochastic programming model for comprehensive tactical planning of multi-period multi-product supply chains under supplier uncertainty. This uncertainty combines random yield and stochastic lead times. Theoretical results regarding the impact of supplier uncertainty on procurement decisions are derived. An application in the wind turbines industry is illustrated.

159	Saturday, 08:00 AM - 09:30 AM, International 9	<i>Track:</i> Sustainable Operations
	<i>Session:</i> Managing Incentives for Sustainable Operations	
	<i>Chair(s):</i> Luyi Gui	

051-0036 Alliance, Product Durability and Consumer Behavior

Yuhong He, Student, University of California Irvine, United States
Saibal Ray, Associate Professor, McGill University, Canada
Shuya Yin, Associate Professor, University of California Irvine, United States

We consider a two-period model involving a value chain comprising two upstream firms (selling complementary goods) and one downstream firm (selling a durable end product). We are interested in understanding the role of the end product durability and consumer behaviors (forward-looking and/or patient to wait and buy in the future).

051-0739 Cooperation for Sustainability: Sharing Technology to Improve Product Recyclability

Fang Tian, Student, Marshall School of Business, United States
Greys Sosic, Associate Professor, Marshall School of Business, United States
Marco Slikker, Associate Professor, School of Industrial Engineering, Netherlands

We analyze a model in which manufacturers can share technology for improvement of product recyclability as a way to encourage producers to invest in product design. Because a company sharing its technology makes competitors' products more attractive and potentially loses its market share, we study possible incentives for technology sharing.

051-0955 Organizing Socially Responsible Operations along the Supply Chain

Paolo Letizia, Assistant Professor, Erasmus University Rotterdam, Netherlands
George Hendrikse, Professor, Erasmus University Rotterdam, Netherlands
Nishant Mishra, Assistant Professor, Rotterdam School of Management, Netherlands

In this paper, we investigate how the structure of a supply chain influences the level of socially responsible (or CSR) activities in the chain. We find that the efficiency of a supply chain structure depends on the alignment between the distribution of bargaining power and the costs of CSR investments.

051-1037 Measurement and Improvement of Environmental Performance under Voluntary versus Mandatory Disclosure

Basak Kalkanci, Assistant Professor, Georgia Institute of Technology, United States
Erjie Ang, Student, Stanford University, United States
Erica Plambeck, Professor, Stanford University, United States

We investigate when a firm should learn and disclose its impact (accounting for the response from consumers and investors) and whether policy makers should mandate disclosure. Experimentally, we show that voluntary disclosure can boost sales.

160	Saturday, 08:00 AM - 09:30 AM, International 10	<i>Track:</i> Humanitarian Operations and Crisis Management
	<i>Session:</i> Journal Editors	
	<i>Chair(s):</i> Graham Heaslip Kate Hughes	

051-1413 Humanitarian Operations and Crisis Management Editors' Panel

Kate Hughes, Student, Macquarie University, Australia
Steve Brown, Professor, University of Exeter, United Kingdom
Nezih Altay, Associate Professor, Depaul University, United States
Thomas Choi, Professor, Arizona State University Tempe, United States

Bart MacCarthy, Professor, Nottingham University Business School,, United Kingdom
Alexandre Dolgui, , ,

The Editors' Panel aims to bring top editors from leading international journals around the world to share their ideas about selection consideration and criteria for a potential publication. We are hoping to cover topics such as "What drives editors nuts and what makes them cheer?", "What trends are you noticing in your journal?" This discussion is expected to benefit and strengthen possible publications among doctoral students as well as junior faculties. The editors' insights and viewpoints are important for a submission preparation.

162	<p>Saturday, 08:00 AM - 09:30 AM, International C</p> <p><i>Session:</i> Case/Industry Studies on Supply Chain Risk</p> <p><i>Chair(s):</i> Jason Riley</p>	<i>Track:</i> Supply Chain Risk Management
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051-1261 A Study of Hazards in South Brazilian Highway Network Vulnerability

Henrique Pereira, Student, Federal University of Santa Catarina, Brazil
Mônica Maria Luna, Associate Professor, Federal University of Santa Catarina, Brazil
Carolina Luisa Vieira, Student, Federal University of Santa Catarina, Brazil
Dmontier Aragão Júnior, Student, Federal University of Santa Catarina, Brazil

Road transportation accounts for over half of all freight hauled in Brazil. Thereby, the road transport systems' quality and reliability impact the products competitiveness in international markets. This study addresses the trigger events that lead to highway network vulnerability in Santa Catarina State, one of the main exporters of Brazil.

051-1108 Managing Risk in an Agribusiness Supply Chain

Eduardo Soares Batista, Student, University of Vale do Rio dos Sinos, Brazil
Annibal Scavarda, Professor, Federal University of the State of Rio de Janeiro, Brazil
Iuri Gavronski, Assistant Professor, University of Vale do Rio dos Sinos, Brazil

The coexistence of innovational and traditional products in a supply chain brings uncertainties and risks related to decisions. This research study identifies the factors that result in these risks and which decisions are more critical to be taken and affect the whole supply chain management.

051-0867 Brazilian maritime terminals failure mode analysis

Renata Oliveira, Student, Universidade Federal De Santa Catarina, Brazil
Mônica Maria Luna, Associate Professor, Federal University of Santa Catarina, Brazil
Carolina Luisa Vieira, Student, Federal University of Santa Catarina, Brazil

Potential disruptions in maritime terminals and their consequences must be understood in order to support both events prevention and contingency plans development. Moreover, transportation systems disruptions and their impacts are context dependent. This work presents a failure mode and effect analysis approach to assess potential failures in Brazilian maritime terminals.

051-0025 Behavior Based Risk Management within Hospital Supply Chains

Jason Riley, Assistant Professor, Sam Houston State University, United States
V Sridharan, Professor, Clemson University, United States
Janis Miller, Professor, Clemson University, United States

We investigate how hospital material material's use behaviors to manage risk within their supply chains. Leveraging interviews, confirmatory factor analysis and empirically validated measures, we study the organizations warning and recovery capabilities and several antecedent competencies.

051-1192 Theoretical Gaps in Supply Chain Risk Management: A Preliminary Analysis

Danielle Pozzo, Student, Pontifical Catholic University of Rio Grande Do Sul, Brazil
Peter Hansen, Associate Professor, Pontifical Catholic University of Rio Grande Do Sul, Brazil
Mirian Oliveira, Associate Professor, Pontifical Catholic University of Rio Grande Do Sul, Brazil

This study aims to identify theoretical gaps in supply chain risk management literature. Data processing included open, axial and selective coding and resulted in five systematized categories: specific supply chains, types of risks, impact of risks, agents and softwares.

163	Saturday, 10:00 AM - 11:30 AM, A601	<i>Track:</i> OM Practice
	<i>Session:</i> POMS Practice Leaders Semi Plenary Session: Supply Chain Management	
	<i>Chair(s):</i> Christopher Tang Felipe Caro	

051-1443 Managing Inventory and Supply Decisions with Subcontractors with Large Capacity Costs

Alex Brown, Vice President of Supply Chain, Xilinx, United States
 Ashlie Wallace, Procurement Director, Dell, Inc., United States
 Keith Holliday, Director, Corporate Supply Chain Logistics, Sonoco, United States

Presenters from Dell, Inc., Xilinx, and Sonoco will give presentations on Supply Chain Management. Some of the topics will include: how to manage subcontractors who manufacture the product, the competition for the manufacturer's limited capacity to produce for multiple clients, and approaches to dealing with inventory.

164	Saturday, 10:00 AM - 11:30 AM, A602	<i>Track:</i> Empirical Research in Operations Management
	<i>Session:</i> Empirical Research on Learning	
	<i>Chair(s):</i> Eve Rosenzweig	

051-0090 Types of Team Leader Experience: Disentangling the Effects on Six Sigma Project Success

George Easton, Associate Professor, Emory University, United States
 Eve Rosenzweig, Associate Professor, Emory University, United States

Prior research suggests team leader experience is an important predictor of quality improvement project team success. Based on six years of archival data from a Fortune 500 consumer products manufacturer, we disentangle, using social network analysis, various aspects of team leader experience and their relationship to six sigma project success.

051-0551 A Longitudinal Analysis of Operating Profitability in the U.S. Airline Industry, 1988-2011

Michael Lapré, Associate Professor, Vanderbilt University, United States
 Yasin Alan, Assistant Professor, Vanderbilt University, United States
 Gary Scudder, Professor, Vanderbilt University, United States

We study the drivers of operating profitability in the U.S. airline industry. We compare and contrast legacy carriers and focused carriers pre 9/11 and post 9/11. The primary drivers are yield, load factor, labor cost, and fuel cost. Post 9/11 focused carriers are starting to lose their focus.

051-1205 Codifying Knowledge for New Product Development (NPD) Projects

Gopesh Anand, Associate Professor, University of Illinois Urbana-Champaign, United States
 Aravind Chandrasekaran, Assistant Professor, Ohio State University, United States
 Kevin Linderman, Professor, University of Minnesota, United States

This research examines the importance of know-how knowledge for NPD projects in high-tech companies. We examine the process of codifying know-how knowledge and the role that knowledge management systems play in such codification. We test our model using multilevel data from 108 R&D projects in 34 high-tech business units.

051-0094 Hospital Information Technology Tradeoffs and the Role of Learning

Luv Sharma, Student, Ohio State University, United States
 Aravind Chandrasekaran, Assistant Professor, Ohio State University, United States
 Kenneth Boyer, Professor, Ohio State University, United States

This study examines the impact of investments in three Information Technology bundles on hospital cost and quality outcomes. Two secondary datasets, HIMSS and CMS, are used for the analysis. The results indicate presence of tradeoffs amongst technology bundles in achieving improved performance. These tradeoffs are mitigated with increased Technology Readiness.

165	Saturday, 10:00 AM - 11:30 AM, A701	<i>Track:</i> Closed Loop Supply Chains
	<i>Session:</i> Economics of Product Recovery	
	<i>Chair(s):</i> Canan Savaskan	

051-0605 Robust Design of Closed-loop Supply Chain for Uncertain Carbon Tax and Stochastic Demands

SeyyedAli HaddadSisakht, Student, Iowa State University, United States
 Sarah Ryan, Professor, Iowa State University, United States

We formulate and solve an adjustable robust optimization where transportation capacities of different modes can adapt to changing carbon tax rates and transportation quantities vary by scenarios. Increasing carbon tax uncertainty in the initial periods expands the benefit of adopting the transportation capacity. Efficient modes are used for longer distances.

051-0956 Reverse Channel Design: In-house vs. Outsourcing

Lan Wang, Student, University of Florida, United States
 Gangshu Cai, Associate Professor, Santa Clara University, United States
 Andy Tsay, Associate Professor, Santa Clara University, United States
 Asoo Vakharia, Professor, University of Florida, United States

We investigate the decision drivers of remanufacturing strategies: remanufacture in-house or outsource to a third party. We analyze the impact of profitability and recycling level under both strategies and provide implications for the resulting environmental impact and social welfare of each strategy choice.

051-0838 Recovery Legislation or Taxation/Subsidy Policies for Product Reuse? A Mixed Approach is More Effective

Shumail Mazahir, Student, Hec Paris, France
 Sam Aflaki, Assistant Professor, Hec Paris, France

This paper studies the effect of incorporating recovery legislation on the performance of firms and compares them with incentive schemes such as taxation/subsidy policies in a stackelberg game setting. We characterise conditions under which the two types of policies outperform each other in terms of environmental and economical performance.

- 051-0291** Product Acquisition Management - A Third Party Remanufacturer Perspective
 Akshay Mutha, Student, Penn State University University Park, United States
 Saurabh Bansal, Assistant Professor, Penn State University University Park, United States
 Daniel Guide, Professor, Penn State University University Park, United States

We examine various acquisition strategies for a third party remanufacturer (3PR). We first develop a model for the 3PR's profit maximization problem and characterize the optimal solution. Using realistic data for a smartphone remanufacturer, we show that the hybrid acquisition strategy increases the profit by up to 12%.

166	Saturday, 10:00 AM - 11:30 AM, A702	<i>Track:</i> Empirical Research in Operations Management
	<i>Session:</i> Empirical Research in Retailing	
	<i>Chair(s):</i> Vidya Mani	

- 051-0085** The Implications of Worker Behavior for Staffing Decisions: Empirical Evidence
 Tom Tan, Assistant Professor, Southern Methodist University, United States
 Serguei Netessine, Emeritus Professor, INSEAD, France

We analyze a large, detailed operational data set from a restaurant chain to shed new light on how workload (defined as the number of tables or diners that a server simultaneously handles) affects servers' performance (measured as sales and meal duration).

- 051-0873** Mindfulness and the Prevention of Retail Theft: A Test High Reliability Organizations
 Christopher Swanton, Assistant Professor, College of Charleston Charleston, United States
 Johnny Rungtusanatham, Professor, Ohio State University, United States
 Kevin Linderman, Professor, University of Minnesota, United States
 Hung-Chung Su, Assistant Professor, Wisconsin-White Water, United States

Annually, shoplifting and employee theft cost retailers billions. With the cooperation of a Fortune 100 retailer, we surveyed store employees on their perceptions of security and retail theft. We use the characteristics of High Reliability Organizations to investigate the relationship between employee mindfulness and retail theft.

- 051-0734** Innovations in Multi-channel Fulfillment in Retail: Empirical Evidence
 Ioannis Stamatopoulos, Student, Northwestern University, Greece
 Antonio Moreno-Garcia, Assistant Professor, Northwestern University, United States
 Santiago Gallino, Student, Dartmouth College, United States

Retailers are experimenting with novel strategies to integrate the operations of their online and offline channels, including shipping online orders to stores and fulfilling store orders using the online distribution centers. In this study, we use data from a leading national retailer to shed light on the drivers and consequences

- 051-0319** Demand Estimation under Substitution and Complementarity Effects
 Vidya Mani, Assistant Professor, Penn State University University Park, United States
 Saurabh Bansal, Assistant Professor, Penn State University University Park, United States
 Doug Thomas, Associate Professor, Penn State University University Park, United States

We use detailed transactional data from a big box retailer to estimate demand when there are substitution and complementarity effects. We explore the implications of these effects on changing assortments for remodeled stores.

168	Saturday, 10:00 AM - 11:30 AM, A704	<i>Track:</i> Retail Operations Management
	<i>Session:</i> Retail Operations - Nanostores in Megacities 1	
	<i>Chair(s):</i> Jan Fransoo Edgar Blanco	

- 051-0676** Small Retailers in Casablanca
 Youssef Boulaksil, Assistant Professor, United Arab Emirates Univ, United Arab Emirates

We collected data from 335 small traditional retailers that are located in the neighborhoods of big cities in Morocco, such as Casablanca. The analysis of the data reveals interesting insights on their operations and decision making. We also discuss (research) ideas on how to improve the supply chain efficiency.

- 051-0687** Particularities of Distribution Strategies in Emerging Economies: Case Studies in Colombia
 Edgar Blanco, Professor, Massachusetts Institute of Technology, United States
 Jan Fransoo, Professor, Eindhoven University of Technology, Netherlands
 Christopher Mejia-Argueta, Academic Leader, Center For Latin American Logistics Innovation, Colombia
 Isabel Agudelo, Executive Director, Center For Latin American Logistics Innovation, Colombia

Emerging markets face a big challenge in the distribution strategies because of the high presence of nanostores and the customer characteristics/needs. This work presents a summary of findings in Colombian companies attending nanostores and how they create commercial and logistics strategies to reach effectively multiple channels in a profitable way.

- 051-0870** Study on Coordinative Delivery Policy to Nanostores
 Lei Zhao, Associate Professor, Tsinghua University, China
 Jan Fransoo, Professor, Eindhoven University of Technology, Netherlands

In megacities in China, nanostores play an important role in retail and in the lives of urban residents. Based on store interviews and store consumer surveys, we try to understand the business models of nanostores and the impact of coordinative delivery policies on their operations.

- 051-1082** Supply Chain Strategies for the Delivery in Mexico City
 Karla Valenzuela, Professor, Tecnologico De Monterrey, Mexico

Sergio Caballero, Student, Tecnologico De Monterrey, Mexico
 Edgar Blanco, Professor, Massachusetts Institute of Technology, United States

An important phenomenon is the abundance of nanostores. It is important to recognize the complexity of supply chain strategies to serve these nanostores. We analyze and compare different strategies for one company that makes the delivery of their product in the area of Mexico City.

169	Saturday, 10:00 AM - 11:30 AM, A705 <i>Session:</i> Hospital Operations and Stochastic Models <i>Chair(s):</i> Pengyi Shi	<i>Track:</i> Healthcare Operations Management
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- 051-1448** Capacity Management for Online Appointment Scheduling
 Nan Liu, Assistant Professor, Columbia University, United States
 Peter van de Ven, Research Scientist, IBM, United States
 Bo Zhang, Research Scientist, IBM, United States

Consider an electronic patient appointment booking system for making online reservations. The system displays a set of available time slots and patient selects an acceptable slot or leaves if none are acceptable. We study patient heterogeneous preference using survey data and propose effective scheduling algorithms to optimize the long-term utilization.

- 051-0220** Optimal Statistical and Operational Methods for Improving Post-Discharge Care to Reduce Patient Readmissions
 Jonathan Helm, Assistant Professor, Indiana University, United States
 Adel Alaeddini, Assistant Professor, University of Texas San Antonio, United States
 Jon Stauffer, Student, Indiana University, United States
 Kurt Bretthauer, Professor, Indiana University, United States

17% of Medicare patients are readmitted within 30 days of discharge. Post-discharge monitoring is effective in reducing readmissions but is currently done ad-hoc. We develop a large scale optimization and decomposition approach for weakly-coupled network flow problems to design optimal post-discharge monitoring plans and allocate capacity for post-discharge patient visits.

- 051-0789** Overflow Policies for Emergency Department Patients Awaiting Inpatient Beds
 Pengyi Shi, Assistant Professor, Purdue University, United States
 Jim Dai, Professor, Cornell University, United States

Emergency department patients who wait to be admitted to inpatient beds sometimes have to be overflowed to a non-primary ward when they wait too long. We study a queueing system to gain insights into the impact of overflow policies and how bed capacity and discharge timing affect the overflow rate.

170	Saturday, 10:00 AM - 11:30 AM, A706 <i>Session:</i> Overview of Lean Approaches in Healthcare <i>Chair(s):</i> Lawrence Fredendall	<i>Track:</i> Healthcare Operations Management
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- 051-1193** Benchmarking Occupational Safety among U.S states: An Efficiency Assesment Approach
 Can Celikbilek, Student, Ohio University, United States
 Bulent Erenay, Student, Ohio University, United States

Data Envelopment Analysis (DEA) will be utilized to assess the relative efficiency and productivity of U.S states for reducing the non-fatal injuries in the construction sector. A state-by-state analysis and comparison is performed by considering the sources of injuries and the possible parts of body affected.

- 051-0970** Lean in Healthcare: A Systematic Literature Review and Social Network Analysis
 Crislayne Plytiuk, Student, Pontifical Catholic University of Parana, Brazil
 Sergio Gouvea da Costa, Associate Professor, Pontifical Catholic University of Parana, Brazil
 Edson Pinheiro de Lima, Associate Professor, Pontifical Catholic University of Parana, Brazil

This article presents the results of a systematic review of 280 papers from the Lean Healthcare literature. Bibliometric citation/co-citation and Social Network analysis compound the strategies for investigating the articles sampled. The results reveal a still emergent field marked by poorly explored relationships and knowledge, indicating abounding possibilities for research.

- 051-0437** Lean Health Care: A Look through its Tools, an Approach from the Literature
 Emerson Giraldo , Student, Universidad Eafit, Colombia
 Juan Arrieta - Posada, Professor, Universidad Eafit, Colombia

This paper presents generalities of Lean manufacturing and applications in Healthcare organizations. A review of the literature was done, identifying applications of Lean tools in this sector. A questionnaire was developed to be applied in different healthcare institutions in Medellin Colombia, with the objective to make comparisons with the literature

- 051-0261** Extent of Lean Operations Implementation in Hospitals
 Yunsik Choi, Student, Clemson University, United States
 Lawrence Fredendall, Professor, Clemson University, United States
 Aleda Roth, Professor, Clemson University, United States
 John Whitcomb, Assistant Professor, Clemson University, United States
 Rosanna Fierro, Continuous Improvement Fellow, Akron Children's Hospital, United States
 Dorothy Hung, Assistant Scientist, Palo Alto Medical Foundation Research Institute, United States
 Lori Pelletier, Associate Vice President, UMass Memorial Health Care, United States
 Jack Bowhan, Network Manager, ThedaCare Center for Healthcare Value, United States
 Richard Holden, Assistant Professor, Vanderbilt University, United States
 Eric Dickson, Professor, University of Massachusetts Memorial Health Care, United States
 Susan Moffatt-Bruce, Associate Professor, Ohio State University, United States

A survey instrument was developed to measure the “leanness” of a hospital. We drew upon the extant literature and the experiences of healthcare professionals, who were involved in implementing lean and apply a rigorous methodology. The survey has been pilot tested and will be distributed to hospitals throughout the U.S.

171	<p>Saturday, 10:00 AM - 11:30 AM, A707</p> <p>Session: Executing New Product Introductions</p> <p>Chair(s): Jeremy Kovach</p>	Track: Product Innovation and Technology Management
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- 051-0063** Developing, Signaling, Learning, and Screening Quality of a New Product through Free Trial Period
 Shouqiang Wang, Assistant Professor, Clemson University, United States
 Gulru Ozkan, Assistant Professor, Clemson University, United States

We evaluate a seller's new product development, pricing, timing strategies when launching a new product of unobservable product quality via a time-locked trial program, where buyers privately update their perceived quality. We find that proactive provision of private perceived quality information can be an innovative way of communicating product quality.

- 051-0925** Driving Design Innovation up the Supply Chain
 Tamer Boyaci, Professor, McGill University, Canada
 Ali Inay, Student, McGill University, Canada

We consider innovative OEMs that design competing products relying on a key component sourced from a supplier with technological capability. Suppliers' innovation efforts define their capabilities, but OEMs can engage to enhance them (with spillovers). We derive equilibrium design (quality), innovation and capability investment, and pricing decisions for alternative configurations.

- 051-1079** Innovation in R&D Pipelines
 Joel Wooten, Assistant Professor, University of South Carolina, United States

New product introductions often occur via R&D pipelines. Looking at the pharma industry, we explore the optimal shape of one such pipeline through a stylized game simulation.

174	<p>Saturday, 10:00 AM - 11:30 AM, M101</p> <p>Session: Economics of Information Systems - I</p> <p>Chair(s): Mohammad Rahman</p>	Track: Information Systems
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- 051-0333** The Effect of Sister-Store Presence and Market Competition on Product Assortment: Evidence from Book Retailing
 Tao Chen, Assistant Professor, University of Maryland, United States
 Yu Jeffrey Hu, Associate Professor, Georgia Institute of Technology, United States
 Mohammad Rahman, Associate Professor, University of Calgary, Canada
 Jiong Sun, Assistant Professor, Illinois Institute of Technology, United States

We obtain product assortment data from all stores of a nation-wide bookstore chain. We study how competition and the presence of sister stores affect the retail chain's product availability. We find that having a sister store nearby reduces product availability and this effect is stronger for niche products.

- 051-0369** Cloud Implications on Software Network Structure and Security Risks
 Terrence August, Assistant Professor, University of California San Diego, United States
 Marius Niculescu, Assistant Professor, Georgia Institute of Technology, United States
 Hyoduk Shin, Assistant Professor, University of California San Diego, United States

The introduction of SaaS versions of on-premises application software helps diversify security risks. Strategic interactions between the vendor and consumers can lead the lower inherent quality version to actually be preferred by a higher tier customer segment when security risk associated with each version is endogenously determined by consumption choices.

- 051-0707** An Internet-Enabled Move to the Market
 Fengmei Gong, Student, University of Calgary, Canada
 Barrie Nault, Professor, University of Calgary, Canada
 Mohammad Rahman, Associate Professor, University of Calgary, Canada

Based on transaction cost analysis, our study examines whether the advent of the Internet coincided with a move to the market in one of the most connected industries in the economy: logistics. Our study provides direct evidence that the Internet enables the move to the market.

- 051-1260** Is it Enough? Evidence from a Natural Experiment in India's Agriculture Markets
 Chris Parker, Assistant Professor, Penn State University University Park, United States
 Kamalini Ramdas, Professor, London Business School, United Kingdom
 Nicos Savva, Assistant Professor, London Business School, United Kingdom

Access to ICTs improves market efficiency. However, an estimated 12% further improvement is possible when reliable and unbiased information is delivered via an ICT application, over and above access to mobile phones and other means of communication. The service also increases the rate at which prices converge over time.

175	<p>Saturday, 10:00 AM - 11:30 AM, M102</p> <p>Session: Inventory allocation and transshipment policies</p> <p>Chair(s): Zumbul Atan</p>	Track: Inventory Management
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- 051-0197** Supply Allocation under Advance Demand Information
 Felix Papier, Associate Professor, Essec Business School, France

We study the problem of allocating limited supply under advance demand information (ADI). We use Markov Decision Processes to formulate the problem, develop an efficient heuristic solution, and derive structural properties of the model. Our research is motivated by an agri-food manufacturer that operates in several European countries.

051-0481 Transshipment between Two Retailers under Demand Disruption Risk

Yabing Zhao, Student, Suny At Buffalo, United States
Charles Wang, Associate Professor, Suny At Buffalo, United States
Jun Ru, Assistant Professor, Suny At Buffalo, United States
Jun Zhuang, Assistant Professor, Suny At Buffalo, United States

This research investigates how retailers should transship inventory in response to demand disruption caused by an extreme event. We analyzed the effects of key parameters of the extreme event on the retailers' transshipment decisions, and compared the performance of the centralized and decentralized supply chain.

051-1191 A Stochastic Decision Model for Achieving Optimal Trans-Shipment

Dilupa Nakandala, Lecturer, University of Western Sydney, Australia

We study the total cost of an inventory system considering that the lead time is a controllable function of service cost which is more realistic but has got a limited attention in previous research. The proposed method is less complex, more pragmatic and easily adoptable by ordinary logistics managers.

051-1421 Lateral Transshipment and Rationing Policies for Multi-Retailer Systems

Zumbul Atan, Assistant Professor, Eindhoven University of Technology, Netherlands
Larry Snyder, Associate Professor, Lehigh University, United States
George Wilson, Associate Professor, Lehigh University, United States

We study a multi-retailer system with each retailer serving to two types of customers. Each retailer employs a rationing, critical level, continuous review (r,Q) policy with lost sales. Retailers can transship items from either other retailers or a central depot. We propose an iterative heuristic, which relies on adjusting the demand rates and the missed-demand costs of both types of customers at all retailers, to solve the overall rationing and transshipment problem.

176	Saturday, 10:00 AM - 11:30 AM, M103	<i>Track:</i> Manufacturing Operations
	<i>Session:</i> Operational Models and Research in TQM, Lean, Six-Sigma	
	<i>Chair(s):</i> Rick Hardcopf	

051-0035 Lean and Performance: The Impact of Organizational Culture

Rick Hardcopf, Student, University of Minnesota, United States
Rachna Shah, Associate Professor, University of Minnesota, United States

The use of lean methods to drive sustainable competitive advantage has been a cornerstone of manufacturing strategy since the early 1980's. Unfortunately, success from using lean has been mixed. Using a moderation model, this study evaluates the role of organizational culture, and cultural ambidexterity, in realizing performance benefits from lean.

051-0167 The Prevalence and Effectiveness of SPC, Pre-Control, and Expert Intuitive Control among SMEs

Mark Hanna, Professor, Georgia Southern University, United States
Venkateswarlu Pulakanam, Senior Lecturer, University of Canterbury, New Zealand
Dirk Pons, Senior Lecturer, University of Canterbury, New Zealand

SPC and pre-control are relatively well known and widely studied. By contrast, expert intuitive process control is not widely studied even though operators are known to subjectively control processes. We utilize case studies from New Zealand and the United States to develop propositions regarding expert intuitive process control.

051-0148 Improving the Layout to Enhance the Process Flow in Small Batches Weight Control Laboratory

Milton Vieira Junior, Professor, Universidade Nove De Julho, Brazil
Claudio Pereira, Student, Universidade Nove De Julho, Brazil

Mistaken layout leads to disordered material flows and jeopardizes production system dynamics. This paper proposes to enhance the production dynamics of small batches in a weight control laboratory of a fragrances manufacturer by means of layout study, aiming the best combination of materials flow.

177	Saturday, 10:00 AM - 11:30 AM, M104	<i>Track:</i> Marketing and OM Interface
	<i>Session:</i> Case Study and Empirical Research	
	<i>Chair(s):</i> Bart MacCarthy	

051-0675 Service Strategy as a Tool for Press Agent

Kleber Nobrega, Professor, Universidade Potiguar, Brazil
Cintia Barreto, Professor, Universidade Potiguar, Brazil
Kleavelando Santos, Professor, Universidade Potiguar, Brazil

This paper investigates to what extent press agents establish a service strategy in their operation. The results indicate that these professionals do not usually define a service strategy, do not detail the services to be provided, and do not link services offer to a proactive strategy

051-0072 The Impact of New Product Flexibility on Operational Performance: An Applied Study on Jordanian Manufacturing

Ahmed Alamro, Assistant Professor, Qatar University, Qatar

The study investigated the impact of new product flexibility (NPF) on operational performance of manufacturing companies in Jordan. The results indicated that NPF positively affects operational performance by improving quality, increasing productivity, decreasing cost and lead-time. Directions for future research for managers are included in this study.

051-1316 Exploring the Long Tail and its Operational Consequences

Bart MacCarthy, Professor, Nottingham University Business School,, United Kingdom

The long tail concept was popularized by Anderson (2006). It suggests that cumulative sales from the demand curve tail have become more significant with changes in marketing channels, information availability and consumer behavior. Here we critically explore its relevance in the context of product variety, order fulfillment and Mass Customization.

051-0345 Marketing Strategies for Workplace Safety Consultants of Small Business

Tonny Rodrigues, Associate Professor, Faculdade Santo Agostinho, Brazil
 Átila Lira, Associate Professor, Faculdade Santo Agostinho, Brazil
 Irenilza Nääs, Professor, Universidade Paulista - Unip, Brazil

The research aims to use marketing principles to address the proper techniques that can be usefully applied by consultants work safety towards small businesses. It identified that small businesses have characteristics that are centered around the owner. As a marketing strategy, personal selling can be effective.

178	Saturday, 10:00 AM - 11:30 AM, M106	<i>Track:</i> OM and Economic Models
	<i>Session:</i> Networks, Markets, and Information	
	<i>Chair(s):</i> Kostas Bimpikis	

051-1168 Financial Competition and Endogenous Risk

Philipp Strack, PostDoc, Microsoft Research, United States

This paper analyzes the consequences of competition between fund managers, when investors decide based on historic relative performance. In this market fund-managers create endogenous risk which leads to substantial welfare losses. Welfare losses increase when competition between the fund managers increases.

051-1170 Dynamic Matching in Overloaded Systems

Jacob Leshno, Assistant Professor, Columbia University, United States

We consider the dynamic assignment of heterogeneous items to agents with heterogeneous preferences through waiting lists. Due to random arrivals, agents will choose to be mismatched rather than wait for their preferred items. Using mechanism design, I show that using randomization in the buffer-queue can improve welfare.

051-1428 Cournot Competition in a Networked Environment

Kostas Bimpikis, Assistant Professor, Stanford University, United States

The paper considers Cournot competition among firms in a networked environment. A bipartite graph determines which markets a firm supplies to. We show that the resulting game has a unique equilibrium for any network and provide a characterization of the equilibrium production quantities. Our results identify a close connection between the equilibrium and supply paths in the underlying network. We then study how profits and welfare are affected by a firm entering a new market or by two firms merging. Our analysis shows that the insights from a single market do not apply in a networked market.

051-1429 Information Provision in Dynamic Innovation Tournaments

Mohamed Mostagir, Assistant Professor, University of Michigan Ann Arbor, United States
 Kostas Bimpikis, Assistant Professor, Stanford University, United States

Innovation tournaments have emerged as a viable alternative to the standard research and development process. They are particularly suited for settings that feature a high degree of uncertainty both in terms of the actual feasibility of a breakthrough to the problem in hand as well as with regards to the appropriate approach to tackle it. Participants learn about the underlying environment from their competitors' gradual progress. On the other hand, information about the status of competition may adversely affect effort provision from the laggards. Thus, the tournament's information provision mechanism is critical for its success. This paper explores the issue

179	Saturday, 10:00 AM - 11:30 AM, International 2	<i>Track:</i> General Track
	<i>Session:</i> Innovation & Change Management	
	<i>Chair(s):</i> Andrew Finger	

051-0477 The Process of Institutionalization of a Course Management: A Case of the UFGD-Dourados/MS

Sergio Adelar Brun, Student, UTFPR, Brazil
 Antonio Vaz lopes, Student, UTFPR, Brazil
 Edson Hermenegildo Pereira Junior, Assistant Professor, UTFPR, Brazil
 José Roberto Lopes, Professor, UFMS, Brazil
 Saulo Fabiano Amâncio Vieira, Professor, UEL, Brazil

The study is the origin in considering the emergence of educational policies in UFMS/UFGD/Dourados-MS, in order to analyze the process of institutionalization. It shows as occurred in the context of educational policies, changes in regulations and aspects the process of creation, which results in a political character in its creation.

051-0753 Organizational Change Management in a Strategic Perspective: A Case Study

Roberto Kanaane, Professor, CEETEPS, Brazil
 Daniele Endler, Student, CEETEPS, Brazil
 Getulio Akabane, Professor, CEETEPS/Anhanguera, Brazil
 Helena Peterossi, Professor, CEETEPS, Brazil

Changes in the business environment occur in structural, functional and technological levels. Then examines Change Management during implementation of integrated technologies at sports retail group in Latin America. The method was inductive with non-probabilistic sample together with 15 employees to develop strategies for decision making in line with organizational purposes.

051-0989 Absorbing the Future: The Relationship of Absorptive Capacity to the Firm's Technology Anticipation Capability

Barbara Flynn, Professor, Indiana University, United States
 Andrew Finger, Associate Professor, Universidade Federal de Alagoas, Brazil
 Ely Paiva, Associate Professor, Fundacao Getulio Vargas, Brazil

This paper addresses how the subsets of absorptive capacity affect the technology anticipation capability of a firm and their relationship to operations performance, allowing them to achieve and sustain a manufacturing competitive advantage. The findings indicate different results on the effect for each of the subsets and their importance.

051-0340 Innovation Network SMEs: Determinants and Social Consequences

Angela Sakamoto, Professor, Centro Universitário Luterano de Palmas, Brazil
Marcos Vasconcellos, Professor, Fundacao Getulio Vargas, Brazil

The innovation emergence in SMEs network was researched using Grounded Theory; data from 36 factories visits and 3,700 minutes of interviews were transcribed and analyzed. It was evidenced network's pro-collective orientation that allowed us to understand the collaboration dynamics that results in innovation and which promotes social change around them.

180

Saturday, 10:00 AM - 11:30 AM, International 3

Track: Scheduling and Logistics

Session: Logistics and Reversed Logistics

Chair(s): Dennis Yu

051-0375 Optimizing Supply Chain Decisions for a Modular Product with Returns

M. Ali Ulku, Assistant Professor, School of Management and Leadership, United States
Juliana Hsuan, Associate Professor, Copenhagen Business School, Denmark

For a returnable product with a stochastic demand that is dependent on both price and modularity level, we determine the expressions and conditions for the manufacturer's optimal decisions on the wholesale price, refund rate, and modularity level, and the retailer's optimal decisions on the price and order quantity.

051-0475 Multi-Item Shipment Consolidation

James Bookbinder, Professor, University of Waterloo, Canada
Ali Ulku, Assistant Professor, Capital University, United States

Shipment consolidation is the purposeful combination of a number of small loads, to be transported together on the same vehicle. We propose a new cost model for the multi-product case. Via myopic analysis, we explore the effects of load make-up on the dispatch decisions by private carriage (one's own truck).

051-0700 Product Differentiation and Sharing

Hendrarto Supangkat, Student, Illinois Institute of Technology, United States
Jiong Sun, Assistant Professor, Illinois Institute of Technology, United States

Like the traditional product differentiation models, sharing offers an opportunity to reach the low valuation consumers. However, the cannibalization effect differs, because the cost of consumption is a choice of consumers, to some extent. We study when sharing increase profit, and how it impacts the product differentiation decision.

051-0960 Logistics Provider's Capacity Decision When Facing Uncertain Demand with Seasonality

Dennis Yu, Associate Professor, Clarkson University, United States

We investigate a logistics provider's capacity investment decision in an environment with uncertain demand which exhibits high seasonality. The logistics provider invests in capacity at the beginning of the season and has the opportunity to contract with third parties as season peak demand approaches.

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Saturday, 10:00 AM - 11:30 AM, International 4

Track: Behavior in Operations Management

Session: Strategic behavior in OM

Chair(s): Nikolay Osadchiy

051-0221 The Impact of Strategic Consumer Behavior on A Financially Distressed Retailer

Michelle Xiao Wu, Student, Booth School of Business, United States
John Birge, Professor, University of Chicago, United States
Rodney Parker, Associate Professor, University of Chicago, United States
S. Alex Yang, Assistant Professor, London Business School, United Kingdom

Financially distressed retailers often run liquidation sales to recover capital from the failed ventures. We find that strategic waiting in anticipation of a potential future liquidation sale can exacerbate a firm's current financial distress significantly, which become a self-fulfilling prophecy for the firm.

051-0256 Behavior in Revenue Management Decision Making

Bahriye Cesaret, Student, University of Texas Dallas, United States
Elena Katok, Professor, University of Texas Dallas, United States

We consider the well known two-class revenue management (RM) problem, and study the effects of decision making format (i.e., upfront vs. sequential decision making) and problem complexity (i.e., allowing ordered vs. unordered customer arrivals) on capacity allocation decisions. We report on results of three laboratory experiments.

051-1101 Experimental Study of Buy or Wait Decisions

Nikolay Osadchiy, Assistant Professor, Emory University, United States

We use a controlled experiment to study consumer wait or buy decisions. A substantial fraction of subjects makes decisions consistent with expected utility maximization. Depending on the information available to subjects their decisions may be consistent with simple heuristics. Implications for pricing are discussed.

051-1385 Innovative Dynamic Pricing: The Potential Benefits of Early-Purchase Reward Programs

Yossi Aviv, Professor, Washington University St Louis, United States
Mike Wei, Student, Washington University St Louis, United States

We study pricing models of fashion goods under strategic consumer behavior. Using a rigorously developed game theoretical framework, we demonstrate the efficacy of a "reward program" as a segmentation mechanism.

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Saturday, 10:00 AM - 11:30 AM, International 5

Track: Supply Chain Contracting

Session: Incentives and Channel Structures

Chair(s): Sean Zhou

051-0307 Synergy from Channel Differentiation and Competition

Yanzhi Li, Associate Professor, City University of Hong Kong, Hong Kong
 Felix Papier, Associate Professor, Essec Business School, France
 Yongquan Lan, Assistant Professor, Xiamen University, China

We analyze a three-tier supply chain where a manufacturer distributes a product to a retailer through two suppliers. The two suppliers differ in their ability of offering return credits and they compete through charging different wholesale prices. We show how such a channel configuration can benefit all channel members.

051-0790 Cooperation and Contract Design in Project Management with Outsourcing

Xiaoqiang Cai, Professor, Chinese Univ of Hong Kong, Hong Kong
 Nicholas Hall, Professor, Ohio State University, United States
 Feng Zhang, Lecturer, Chinese Univ of Hong Kong, Hong Kong

We consider a project management problem where the prime contractor outsources tasks to a set of subcontractors, which involves (i) coordination among the subcontractors; and (ii) contract design by the prime contractor, to incentivize the subcontractors. We study the two issues by a cooperative game and a principal-agent model, respectively.

051-0972 The Supply Chain Finance Role of 3PL's Procurement Service

Xiangfeng Chen, Associate Professor, Fudan University, China
 Gangshu Cai, Associate Professor, Santa Clara University, United States
 Jeannette Song, Professor, Duke University Durham, United States

Third-party logistics (3PL) firms have taken the role of procurement for the retailers. We consider a manufacturer, a retailer, and a 3PL firm under a newsvendor framework. Our analysis indicates that there exists a Pareto zone where all firms benefit from the procurement service compared with the traditional logistics service.

051-1209 Evaluating Project Contracts with Time-Related Incentives

Sean Zhou, Associate Professor, Chinese Univ of Hong Kong, Hong Kong
 Christopher Tang, Professor, University of California Los Angeles, United States
 Kairen Zhang, Student, Chinese Univ of Hong Kong, Hong Kong

We examine the implications of incentives for early completion or disincentives for late completion in project management when project completion time is uncertain. Specifically, we examine a contract that combines the "time-based" contract and the "A+B" contract that are commonly observed in practice.

183

Saturday, 10:00 AM - 11:30 AM, International 6

Track: Service Operations

Session: Topics in Airline Operations

Chair(s): Michael Dixon

051-0889 The Costs of Inefficient Airline Robust Scheduling Practices: An Empirical Study

Scott Atkinson, Professor, University of Georgia, United States
 Kamalini Ramdas, Professor, London Business School, United Kingdom
 Jonathan Williams, Assistant Professor, University of Georgia, United States

Airlines today use robust scheduling to plan ahead for unforeseeable disruptions. We empirically examine three common robust scheduling practices: flexibility to swap aircraft, flexibility to swap gates, and scheduled downtime. We characterize efficient operating practices in the airline industry by estimating a multiple-outcome, multiple-input production frontier.

051-1180 How does Loyalty Program affect Customer Satisfaction? The Case of Airlines and Hotels in Emerging Markets

Maria Alvarez Gil, Professor, Universidad Carlos III de Madrid, Spain
 Wei Yan, Student, Universidad Carlos III de Madrid, Spain

This paper studies how loyalty programs affect customer satisfaction with service providers in the airline and hotel industry in emerging markets. It is found that factors such as the number of program partners and redemption options of the loyalty program can enhance customer satisfaction.

051-0017 Cyclical Dynamics of Airline Industry Earnings

Kawika Pierson, Assistant Professor, Willamette University, United States
 John Sterman, Professor, Massachusetts Institute of Technology, United States

To explore the causes of airline profit cycles we develop a behavioral dynamic model of the airline industry with endogenous capacity expansion, demand, pricing, and other feedbacks. We find that aggressive use of yield management may have unintended effect of increasing earnings variance and operational leverage.

051-1184 Reduction of Aviation Fuel Consumption Through Slot Management

Michael Dixon, Assistant Professor, Naval Postgraduate School, United States
 Uday Apte, Professor, Naval Postgraduate School, United States
 Roberto Szechtman, Associate Professor, Naval Postgraduate School, United States

The US Navy aviation community is taking steps towards implementing operations management based solutions to find reduction of unnecessary fuel consumption. This project describes some of the solutions supplied and the challenges faced in making energy-saving operations-based changes in the F18 fighter community.

184

Saturday, 10:00 AM - 11:30 AM, International 7

Track: Supply Chain Management*Session:* Healthcare Supply Chains*Chair(s):* Justin Jia Gemma Berenguer**051-0769** Benchmarking for Improving the Efficiency of In-country Global Health Programs

Gemma Berenguer, Assistant Professor, Purdue University, United States
 Ananth Iyer, Professor, Purdue University, United States
 Prashant Yadav, Professor, University of Michigan Ann Arbor, United States

In understanding global health supply chains, many data streams are used to characterize performance. These data reflect input, output, environmental and other measurements and the combined effect describes overall delivery efficiency. We propose a multi-stage DEA-SFA method to compare similar health programs in sub-saharan Africa and facilitate efficiency improvements.

051-0787 Accelerating Phase I Clinical Trial Through Efficient Strategies

Liang Xu, Student, Penn State University University Park, United States
 Susan Xu, Professor, Penn State University University Park, United States
 Hui Zhao, Assistant Professor, Penn State University University Park, United States

80% of clinical trials run overtime, causing drug companies millions daily. In this paper, we look at mitigating clinical trial inefficiency, starting from Phase I trial. We formulate it as a Markov Decision Process and propose different strategies to conduct the trials in order to reduce Phase I time.

051-1033 An Analysis of Drug Shortages: Inventory Management and Contract Designs

Justin Jia, Assistant Professor, Purdue University, United States
 Hui Zhao, Assistant Professor, Penn State University University Park, United States

In this study, we investigate the causes for the recent significant drug shortages from the perspective of pharmaceutical supply chains. We analyze the inventory decisions and contract designs involved, and propose Pareto improvement contracts that mitigate drug shortages, improve drug manufacturers' profits and reduce government spending on drug reimbursement.

051-1227 Dynamic Pharmaceutical Capacity Planning

Hiroko Okajima, Assistant Professor, Towson University, United States
 Susan Xu, Professor, Penn State University University Park, United States
 Hui Zhao, Assistant Professor, Penn State University University Park, United States

Motivated by industry examples, we study a drugmaker's partial outsourcing/capacity expansion strategy. The firm can build in-house capacity and also avail of outsourcing via an option contract. A stochastic dynamic programming is used to explore the optimal strategies over a drug's patent-protected period under various demand patterns.

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Saturday, 10:00 AM - 11:30 AM, International 8

Track: Supply Chain Management*Session:* Measuring and Evaluating Firm and Supplier Performance*Chair(s):* Jose Arrazola**051-1271** Gaining Advantage Through Social Exchange: How and Under What Conditions?

Zach Zacharia, Associate Professor, Lehigh University, United States
 Scott Ellis, Assistant Professor, University of Kentucky, United States
 Robert Trent, Professor, Lehigh University, United States

Social exchange theory suggests that norms of reciprocity motivate firms to provide favorable treatment to those firms who deliver inducements. This research identifies several factors that moderate the relationships among buyer inducements, buyer preferred status and supplier favorable treatment.

051-1019 Examining the Interaction of Power and Supply Chain Strategy on Firm Performance

John-Patrick Paraskevas, Student, University of Maryland, United States
 Curtis Grimm, Professor, University of Maryland, United States
 Isaac Elking, Student, University of Maryland, United States

We extend RDT and the relational view by exploring the effects of the sourcing strategy the firm is pursuing in terms of supplier concentration and dependency on performance through use of a unique set of archival data made available by Bloomberg we quantitatively estimate dependency and concentration between manufacturing firms.

051-1040 Value and Supply Chain in Higher Education: An Interactive Qualitative Analysis of Chain Links

Cesar Ortega, Student, UNIVERSIDAD NACIONAL AUTONOMA DE HONDURAS (UNAH), Honduras
 Jose Arrazola, Student, UNIVERSIDAD NACIONAL AUTONOMA DE HONDURAS (UNAH), Honduras
 Julio Zavala, Student, UNIVERSIDAD NACIONAL AUTONOMA DE HONDURAS (UNAH), Honduras

This paper evaluates higher education supply and demand relationships by a value and supply chains model. Through eight focus groups and a system for interactive qualitative analysis (SIQA), the proposed model was validated, noticing frictions due to missing linkages in practice, despite being a key issue for all informants.

051-1029 A Contemporary Gender Predominance: A Honduran Textile Manufacturing Diagnose

Cesar Ortega, Student, National Autonomous University of Honduras (UNAH), Honduras
 Jesus Argueta, Professor, National Autonomous University of Honduras (UNAH), Honduras
 Taria Ruiz, Student, National Autonomous University of Honduras (UNAH), Honduras

This qualitative investigation represents the first stage of the Human Capital Engineering Analysis, along the small and medium textile manufacturing companies, located on the city of Tegucigalpa, Honduras where the symptoms of the local manufacturing industry's describe a severe gender displacement phenomena.

186	Saturday, 10:00 AM - 11:30 AM, International 9	<i>Track:</i> Sustainable Operations
	<i>Session:</i> Extended Producer Responsibility and Sustainable Operations	
	<i>Chair(s):</i> Vishal Agrawal	

051-0006 Competing on Toxicity: The Impact of Supplier Prices and Regulation on Manufacturers' Replacement Strategies

Tim Kraft, Assistant Professor, University of Virginia, United States
Gal Raz, Associate Professor, University of Virginia, United States

We examine how the competition to replace a substance of concern influences manufacturers' decisions. We find that while competing on toxicity can cause inefficient outcomes to occur, opportunities exist for manufacturers to work together, even when the shared cost to replace is greater than the sum of their individual costs.

051-0761 The Effect of Extended Producer Responsibility Legislation and Export Bans on Secondary Market Strategies

Isil Alev, Student, Georgia Institute of Technology, United States
Vishal Agrawal, Assistant Professor, Georgetown University, United States
Atalay Atasü, Associate Professor, Georgia Institute of Technology, United States

We investigate the secondary market strategies of a durable goods firm in the presence of EPR legislation and export bans. Our results suggest that EPR regulation may backfire by shortening useful-life of products, and increasing production and disposal. Moreover, we illustrate that export bans may lead to worse environmental outcomes.

051-0861 How does Extended Producer Responsibility Fare when Waste has Value?

Gokce Esenduran, Assistant Professor, Ohio State University, United States
Atalay Atasü, Associate Professor, Georgia Institute of Technology, United States
Luk Van Wassenhove, Professor, INSEAD, France

In a market regulated with take-back legislation, if recycling is profitable then producers have to compete with third-parties in collecting and recycling end-of-life (EoL) products. We answer the question of whether increased collection or recycling targets lead to better environmental or economic outcomes in a competitive market for EoL products.

051-1345 Mobile Money Agent Inventory Management

Karthik Balasubramanian, Student, Harvard University, United States
David Drake, Assistant Professor, Harvard University, United States

"Mobile money" has potential to transform the lives of the 2 billion people who live on <\$2 per day. However, mobile money agents stock-out frequently, delaying the transition to electronic currency by undermining the perception of its liquidity. We study this currency exchange setting as a two-product inventory planning problem.

187	Saturday, 10:00 AM - 11:30 AM, International 10	<i>Track:</i> Humanitarian Operations and Crisis Management
	<i>Session:</i> The Role of Governments in Humanitarian Operations	
	<i>Chair(s):</i> Nathan Kunz	

051-0552 The Mixed Effects of Import Barriers on Humanitarian Logistics

Nathan Kunz, Student, INSEAD, France

Through a multiple case study with four relief organizations, we analyze the impact of import barriers on humanitarian logistics. We find that these barriers negatively impact relief operations during the response phase, but may turn positive in the rehabilitation phase. This knowledge may help relief organizations improving their preparedness efforts.

051-0571 The Role of Host Governments in Humanitarian Logistics: Impact on Performance in Complex Emergencies

Nonhlanhla Dube, Student, University of Groningen, Netherlands
Taco van der Vaart, Associate Professor, University of Groningen, Netherlands
Ruud Teunter, Professor, University of Groningen, Netherlands
Luk Van Wassenhove, Professor, INSEAD, France

This is a case based exploration of host governments' impact on humanitarian logistics (HL) performance in relief operations. Results show marked differences between dysfunctional and "strong" (yet fragile) governments regarding the employment of sovereignty and regulations (in)directly impacting HL. There are (dis) advantages of both weak and strong governments for HL.

051-1268 Emergency Management in Australia

Kate Hughes, Student, Macquarie University, Australia

Emergency management in Australia is based on the Australian Inter-Service Incident System (AIIMS), which operates consistently across all levels of government. This study examines the unique contribution of the two leading organisations - the State Emergency Services and the Rural Fire Services - both staffed by professionally trained volunteers.

188	Saturday, 10:00 AM - 11:30 AM, International B	<i>Track:</i> Learning and Knowledge Management in OM
	<i>Session:</i> Knowledge Management in Mature versus Entrepreneurial Firms	
	<i>Chair(s):</i> Manpreet Hora Jennifer Bailey	

051-1437 Interdisciplinary Panel on Knowledge Management

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

The panel "Knowledge Management in Mature versus Entrepreneurial Firms" will bring together interdisciplinary scholars to discuss their view on Learning and Knowledge Management from different perspectives. Panelists include: Lisa Bobb, Director, Knowledge Sharing and Collaboration at The Coca-Cola Company; Harris Bergman, EVP, Engineering Innovation at United Sciences; David Ku, Professor, Georgia Institute of Technology; Michael Lapre, Professor, Vanderbilt University. Subhashish Samaddar, Professor, Georgia State University

190	<p>Saturday, 01:45 PM - 03:15 PM, A601 <i>Track: OM Practice</i></p> <p><i>Session:</i> POMS Practice Leaders Semi Plenary Session: Business Analytics</p> <p><i>Chair(s):</i> Felipe Caro Christopher Tang</p>
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051-1444 Business Analytics

Brian Eck, Quantitative Analyst, Google, Inc., United States
 Shailendra Jain, Distinguished Technologist and Research Manager, Hewlett-Packard Labs, United States
 Robert Wang, Senior Business Analyst, Nestle USA, Nestle, USA, United States

Presenters from Google, Inc., Hewlett-Packard, and Nestle will discuss business analytics with respect to their companies. From Google, we will hear about approaches to assessing forecast accuracy, applying inventory theory to buffer sizing, and supporting operational decisions. From Nestle, we will hear about how using a value added perspective and developing an optimization model to guide operations, they were able to turn a struggling enterprise into a profitable endeavor.

192	<p>Saturday, 01:45 PM - 03:15 PM, A701 <i>Track: Closed Loop Supply Chains</i></p> <p><i>Session:</i> Closed Loop Supply Chain Research Overview</p> <p><i>Chair(s):</i> Gilvan Souza</p>
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051-0091 Closed Loop Supply Chain Research Overview

Gilvan Souza, Associate Professor, Indiana University, United States

In this session, I provide an overview of research in closed-loop supply chains (CLSCs), with an emphasis on strategic and tactical issues, such as when should an OEM remanufacture, take-back legislation, impact of product recovery on new product design, coordination and incentives, CLSC network design, product acquisition and disposition.

193	<p>Saturday, 01:45 PM - 03:15 PM, A702 <i>Track: Empirical Research in Operations Management</i></p> <p><i>Session:</i> Panel: Discussion on Detection of Small Effects</p> <p><i>Chair(s):</i> Rohit Verma</p>
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051-0297 Panel: Detecting Small Effects and the Role of Statistical Power in OM Empirical Research

Aleda Roth, Professor, Clemson University, United States
 Rohit Verma, Professor, Cornell University, United States
 John Gray, Assistant Professor, Ohio State University, United States
 Sriram Narayanan, Assistant Professor, Michigan State University, United States
 Eve Rosenzweig, Associate Professor, Emory University, United States
 Enno Siemsen, Associate Professor, University of Minnesota, United States

Despite advances in multivariate statistical methods, several empirical research studies still have one problem - the confidence by which small effects are detected and the corresponding type II error. The purpose of this session is to discuss and debate the seriousness of the above issue in empirical research in OM.

194	<p>Saturday, 01:45 PM - 03:15 PM, A703 <i>Track: Sustainable Operations</i></p> <p><i>Session:</i> The Link between Environmental and Firm Performance</p> <p><i>Chair(s):</i> Ramakrishnan Ramanathan</p>
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051-0422 Innovation, Flexibility of Environmental Regulations and Firm Performance

Ramakrishnan Ramanathan, Professor, University of Bedfordshire, United Kingdom

We examine the moderating role of innovation on the link between environmental performance and firm performance. Based on statistical analysis of firm level data in the UK, we find that innovation plays a positive (negative) moderating role when firms are faced with flexible (less flexible) environmental regulations.

051-0575 Sustainability and Firm Performance: A Cross-Sectional Study on US Manufacturing Firms

Nisha Kulangara, Student, University of Texas Arlington, United States
 Olajumoke Awe, Student, University of Texas Arlington, United States

Does it profit to be green? Several firms are making efforts to meet environmental benchmarks as it reduces cost and earns customer goodwill. In order to address our primary research question, we conduct a cross-sectional analysis on US firms to assess the relationship between environmental scores and firm performance.

051-0811 A Conceptual Framework of Sustainability in Project Management oriented to Success

Mauro Martens, Student, Universidade De Sao Paulo, Brazil
 Marly Carvalho, Associate Professor, University of São Paulo, Brazil

This study aims to systematize a conceptual framework of sustainability in project management oriented to success. The systematic literature review was conducted in the main databases. The results present a framework that contributes to the study of sustainability with economic, environmental and social perspectives in project management as well success.

051-1232 Synergy among Environmental Operations Management, Quality Management and Lean Production

Sarah Wu, Associate Professor, Fordham University, United States
 Dongli Zhang, Assistant Professor, Fordham University, United States

Operations management deals with processes of efficiently transforming inputs into desired outputs, where most environmental problems occur. The goal of this study is (1) to evaluate the current environmental operations practices in Chinese manufacturers; and (2) to examine the synergistic effects among environmental operations management, lean production, and quality management.

195	Saturday, 01:45 PM - 03:15 PM, A704	<i>Track:</i> Retail Operations Management
	<i>Session:</i> Retail Operations - Nanostores in Megacities 2	
	<i>Chair(s):</i> Jan Fransoo Edgar Blanco	

051-0602 Selling to Nanostores

Jiwen Ge, Student, Eindhoven University of Technology, Netherlands
Dorothee Honhon, Assistant Professor, University of Texas Dallas, United States
Jan Fransoo, Professor, Eindhoven University of Technology, Netherlands

We study sales effort strategy of Consumer Packaged Goods manufacturers based on product assortment behaviors of nanostores. These stores display strong sales chasing behavior. To avoid that, manufacturers need sales effort program. The paper models the problem as Markov Decision Processes and offers structural properties for the optimal sales effort.

051-0554 Delivery Territory Design in Highly Dense Urban Areas

Sergio Caballero, Student, Tecnologico De Monterrey, Mexico
Edgar Blanco, Professor, Massachusetts Institute of Technology, United States
Karla Valenzuela, Professor, Tecnologico De Monterrey, Mexico

We propose a clustering algorithm for delivery territory design in highly dense urban areas. This algorithm deals explicitly with congestion, typical in megacities, incorporating speed profiles in road networks. It computes an in-tree using time-dependent Dijkstra's algorithm, traverses it in post-order sequence and clusters nodes satisfying capacity and time constraints.

051-1133 Transportation CO2 Emissions For A Parcel Company. Case Study in Mexico City

Josue Velazquez-Martinez, , Eindhoven University of Technology, Netherlands
Jan Fransoo, Professor, Eindhoven University of Technology, Netherlands
Edgar Blanco, Professor, Massachusetts Institute of Technology, United States
Karla Valenzuela, Professor, Tecnologico De Monterrey, Mexico

We present an empirical study for a Multinational Parcel Company that operates in Mexico City. Using statistical analysis we show that city and truck characteristics affect the CO2 performance in dense urban areas. The results may help companies to optimally allocate the fleet in order to reduce CO2 emissions

051-1357 Comparing Two Distribution Strategies towards Nanostores - The Valencia Case

Youssef Boulaksil, Assistant Professor, United Arab Emirates Univ, United Arab Emirates

In this study, we compare the performance of two distribution strategies: the pre-sales strategy and the van-sales strategy. This study is based on a real-life study conducted with the firm 'Valencia' in Casablanca. The study reveals insights that are interesting to manufacturers that struggle with distributing goods in megacities.

196	Saturday, 01:45 PM - 03:15 PM, A705	<i>Track:</i> Healthcare Operations Management
	<i>Session:</i> Hospital Operations: Emergency Department and Beyond	
	<i>Chair(s):</i> Soroush Saghaian	

051-0971 Dynamic Prioritization for Emergency Physicians

Yann Ferrand, Assistant Professor, Clemson University, United States
Michael Magazine, Professor, University of Cincinnati, United States
Uday Rao, Associate Professor, University of Cincinnati, United States
Todd Glass, Division Chief, Emergency Medicine, Nemours Children's Hospital, United States

To improve patient flow in an emergency department, we augment current patient prioritization practices with a consideration of actual time spent in the system. We use discrete event simulation to measure the effect of this approach on patient wait time and length of stay, and compare it to other approaches.

051-1376 Critical Care in Hospitals: When to Introduce a Step Down Unit?

Mor Armony, Associate Professor, New York University, United States

Step Down Units (SDUs) provide an intermediate level of care between the Intensive Care Units (ICUs) and the general medical-surgical wards. We propose a queueing model to capture the dynamics of patient flows through the ICU and SDU in order to determine how to size the ICU and SDU.

051-0750 Pareto Improving Policies in Queueing Systems: Application to Flow Control in Emergency Medical Services

Hung Do, Assistant Professor, University of Vermont, United States
Masha Shunko, Assistant Professor, Purdue University, United States

In decentralized queueing systems, a performance improving coordination policy is sustainable only if it benefits all service agents. Using Emergency Medical Setting as motivation, we find classes of coordination policies for ambulance traffic that improve performance of the system according to multiple objectives and guarantee that all agents are better.

051-0171 Bed-block Management in Emergency Departments

Soroush Saghaian, Assistant Professor, Arizona State University Tempe, United States
Ohad Perry, Assistant Professor, Northwestern University, United States

The bed-block refers to situations in which ED patients who need to be hospitalized cannot be transferred to inpatient wards. We explore effective mechanisms that can reduce the effect of bed-block including use of flexible beds along with effective patient transfer and discharge policies.

197	Saturday, 01:45 PM - 03:15 PM, A706	<i>Track:</i> Healthcare Operations Management
	<i>Session:</i> Co-Creation and Sustainability in Healthcare	
	<i>Chair(s):</i> Tonya Boone	

051-0525 The Medical Encounter: Building Co-Creation Capabilities in Healthcare Services

Antonio Silva, Student, Universidade Municipal São Caetano do Sul, Brazil
Milton Farina, Professor, Universidade Municipal São Caetano do Sul, Brazil

This study explores the conceptual framework on value co-creation within the context of the medical encounter. Based on a synthesis of the literature, this study examines the patterns of capability development with consideration of adding co-creation capabilities through which health care workers can learn from the medical encounter.

051-0252 Linking DART & Firm Performance in Healthcare: Mediating Roles of Value Co-Creation, Trust & Service-Capability

Samyadip Chakraborty, Student, IFHE University, India
Sourabh Bhattacharya, Associate Professor, IMT, India
David Dobrzykowski, Assistant Professor, Rutgers University, United States

Supply-chain transactions are gaining higher importance in hospital operations in the face of spiraling healthcare cost. This study, using a service-dominant-logic (SDL) lens, establishes and empirically validates DART (Dialogue-Access-Risk&Benefit Analysis-Transparency) as antecedent to value co-creation/co-creative activities and trust, both of which in turn leads to superior service capabilities and firm performance.

051-0767 Greening in Healthcare: Is There a Relationship Between Environmental and Financial Performance?

Henry Aigbedo, Associate Professor, Oakland University, United States

The healthcare sector is very important, this being reflected in the fact that it represents a sizeable portion of most countries GDP. There has been mixed results in the literature about the impact of environmental performance on financial performance. This study addresses a related question for the healthcare sector.

051-0993 Sustainable Healthcare: A Framework for Analysis

Tonya Boone, Associate Professor, College of William & Mary, United States

This paper describes the issues associated with implementing sustainability in healthcare. Sustainability in healthcare organizations presents a unique challenge as healthcare managers must simultaneously improve costs, patient safety, satisfaction and quality. Using case studies of health care systems that have successfully introduced sustainability, we develop a conceptual framework.

198 Saturday, 01:45 PM - 03:15 PM, A707 *Track: Product Innovation and Technology Management*
Session: Innovation in Service Design and Development
Chair(s): Ioannis Bellos

051-0384 Surprise! How Unexpected Delight Influences Sequence Effects

Michael Dixon, Assistant Professor, Naval Postgraduate School, United States
Liana Victorino, Assistant Professor, University of Victoria, Canada
Rohit Verma, Professor, Cornell University, United States
Robert Kwortnik, Associate Professor, Cornell University, United States

In many service designs there is a high point -- a peak portion that often defines the entire experience. We investigate how anticipation and surprise influences these peak segments. We test the influence of anticipation and surprise of peaks and their placements using an online survey-based experiment.

051-0458 Design by Learning - Increasing the Efficacy of Last Mile Services by Inferring Consumer Intentions

Kellas Cameron, Student, Boston University, United States

Last mile services ought to account for consumer intentions and improve co-production efficacy through mechanism design. This paper proposes a machine-learning algorithm that infers consumers' intentions from their service selection. This mechanism can then generate choices that incentivize the consumers to choose services that are more efficient for the provider.

051-0755 Service Failures with Consumer Loss Aversion

Tony Cui, Assistant Professor, University of Minnesota, United States
Yan Dong, Assistant Professor, University of Maryland, United States
Kefeng Xu, Associate Professor, University of Texas San Antonio, United States

We develop a game theoretic model with heterogeneous consumers to study service failures. We find consumer loss-aversion may intensify competition by inducing smaller differentiation. Sources of blame for the failures have different effects on service levels and service failures. An empirical study using airline data supports the model and findings.

051-1031 A Framework for Service Design

Ioannis Bellos, Assistant Professor, George Mason University, United States
Stylianios Kavadias, Professor, University of Cambridge, United Kingdom

Motivated by the practices of design firms we build on the customer journey concept, which describes services as multi-stage processes. We develop a parsimonious model and we analyze the provider's decisions on the amount of effort she exerts at each stage of the process and the overall price she charges.

199 Saturday, 01:45 PM - 03:15 PM, A708 *Track: Revenue Management and Pricing*
Session: New Approaches to Demand Modeling in Revenue Management and Pricing
Chair(s): Ilan Lobel

051-0161 Is Capacity Rationing Optimal when Customers Use Anecdotal Reasoning?

Tingliang Huang, Assistant Professor, University College London, United Kingdom
Qian Liu, Associate Professor, Hong Kong University of Science & Tech, Hong Kong

We study strategic capacity rationing when customers have bounded rational expectations in the sense of anecdotal reasoning. Our model generalizes the existing literature by allowing customer expectations to be bounded rational, and reduces to the rational-expectations model when the level of rationality is infinite.

051-0209 Intertemporal Pricing without Priors

Rene Caldentey, Associate Professor, New York University, United States
Ying Liu, Student, New York University, United States

Ilan Lobel, Assistant Professor, New York University, United States

We consider a monopolist selling a product to a population of consumers who are heterogenous in valuations and arrival times. We demonstrate structural properties of policies that attain minimum regret when selling to either myopic or strategic customers.

051-0933 Pricing of Conditional Upgrades in the Presence of Strategic Consumers

Yao Cui, Student, University of Michigan Ann Arbor, United States
 Izak Duenyas, Professor, University of Michigan Ann Arbor, United States
 Ozge Sahin, Assistant Professor, Johns Hopkins University, United States

We study a conditional upgrade strategy that has recently become common in travel industries. Consumers decide which product type to book and whether to request a conditional upgrade or not based on the anticipated upgrade probability. Our analysis identifies multiple benefits of conditional upgrades.

051-1263 Dynamic Admission Control for Multiple Customer Classes with Stochastic Demands and Strict Due-Dates

Tanja Mlinar, Student, Université catholique de Louvain, Belgium
 Philippe Chevalier, Professor, Université catholique de Louvain, Belgium

We consider the problem of dynamic capacity allocation among multiple customer classes with stochastic demands and strict-due dates. Based on Markov Decision Process formulations we provide approximate algorithms which generate a threshold based policy that maximizes long-run profit. We show under what operational conditions such policy provides the optimal performance.

201

Saturday, 01:45 PM - 03:15 PM, M101

Track: Information Systems

Session: Cloud Computing

Chair(s): German Retana

051-0419 An Examination of Logistics and Cloud Computing Service Providers Integration: Evidence from Chinese Firms

Muhammad Abdulrahman, Assistant Professor, Nottingham University Business School China, China
 Nachiappan Subramanian, Associate Professor, Nottingham University Business School China, China
 Xiaolai ZHOU, Student, Nottingham University Business School, China

Using innovation diffusion theory and data from 236 Chinese Small and Medium-Sized logistics service providers (CSMLSPs), we posit that perceived green and cost benefits drives the need for cloud computing (CC) adoption in CSMLSPs. Results indicate Chinese SMLSPs are almost equally attracted by CC green and cost reduction benefits.

051-0241 Early Proactive Education, Customer Retention, and Demand for Technology Support

German Retana, Assistant Professor, INCAE Business School, Costa Rica
 Chris Forman, Professor, Georgia Institute of Technology, United States
 D.J. Wu, Associate Professor, Georgia Institute of Technology, United States

We analyze the outcome of a field experiment executed by a cloud infrastructure services provider during which randomly-selected customers received initial guidance on how to use the service. Treated customers were half as likely to abandon the service and asked 19.55% fewer questions during the first week of their lifetimes.

051-1167 Captive IT Services vs. Cloud-Based IT Services

Joseph Vithayathil, Assistant Professor, Washington State University Pullman, United States
 Vidyanand Choudhary, Associate Professor, University of California Irvine, United States

This paper analyzes the advantages and disadvantages of captive IT services vs. securing IT services from cloud vendors. A qualitative approach that uses an economics based, agent-theoretic framework is employed to analyze the benefits and consequences of these two models for delivering corporate IT services.

202

Saturday, 01:45 PM - 03:15 PM, M102

Track: Inventory Management

Session: Inventory Management

Chair(s): Bahar Biller

051-1401 Management of a Rental System with Usage-Based Loss

Vincent Slauch, Student, Carnegie Mellon University, United States
 Bahar Biller, Associate Professor, Carnegie Mellon University, United States
 Sridhar Tayur, Professor, Carnegie Mellon University, United States

Motivated by a high-fashion dress rental business, we formulate a discrete-time stochastic inventory model with rentals. The decision variable is the number of rental units to procure before the start of a finite rental season. For a system with lost sales and arbitrary demand, we demonstrate structural properties of a system with random inventory loss and random rental duration, including the concavity of the expected profit function and the optimality of inventory allocation policies. We conclude with managerial insights regarding the impact of inventory loss and the rental unit allocation policies.

051-1406 Component Safety Stock Optimization under Highly Variable Supply Lead Times

Ana Muriel, Associate Professor, University of Massachusetts Amherst, United States
 Michael Prokle, Student, University of Massachusetts Amherst, United States
 Faried Beladi, Analyst, Pratt & Whitney, United States
 Rajesh Subbu, Analytics Technology Leader, Pratt & Whitney, United States

We develop a stochastic programming optimization model to minimize component inventory holding while achieving a desired expected customer service level for low-volume, high-tech final products with long and highly variable component supply lead times. Analytical and simulation results show a 60 percent component inventory cost improvement.

051-1409 Coordinating Inventory Replenishment and Transshipment Decisions in Single Supplier, Multi-Retailer System

Rong Li, Associate Professor, Nankai University, China
 Jennifer Ryan, Associate Professor, Rensselaer Polytechnic Institute, United States

We consider a decentralized distribution system consisting of a single supplier and multiple independent retailers facing stochastic demand. We allow for inventory transshipment between the retailers. For a multi-period setting, we develop a contracting scheme which the supplier can use to coordinate the independent retailers' inventory replenishment and transshipment decisions, and to improve his overall profit.

203	Saturday, 01:45 PM - 03:15 PM, M103	<i>Track:</i> Manufacturing Operations
	<i>Session:</i> Empirical research in TQM, lean and six sigma-3	
	<i>Chair(s):</i> Vincent Hargaden	

051-0660 Identifying the Characteristics of Lean Leadership - An Exploratory Study in Pharmaceutical Manufacturing

Cian Coakley, Student, University College Dublin, Ireland
 Eamonn Ambrose, Assistant Professor, University College Dublin, Ireland
 Vincent Hargaden, Assistant Professor, University College Dublin, Ireland

Lean manufacturing efforts to date have tended to focus on practical tools, but developing the capabilities of those leading the implementation of lean initiatives is also important. Our research, using a mixed methods approach in a multi-national manufacturing facility, focuses on identifying the forms of behavior required by lean leaders.

051-1141 Proposal for a Operation Management Model Integrating Lean Production and Sustainability Indicators

Andre Helleno, Professor, The Methodist University of Piracicaba, Brazil
 Aroldo Moraes, Assistant Professor, Methodist University of Piracicaba, Brazil
 Rodrigo Ferro, Student, The Methodist University of Piracicaba, Brazil
 Maria Oliveira Papa, Professor, The Methodist University of Piracicaba, Brazil

This article aims present a model based in value stream mapping that integrates sustainability indicators and production system in the industry of transformation in Brazil. The results are from the weighting of the indicators and assigning values ??according to the model management company

051-0757 Analysis of Performance in Implementation of Lean Manufacturing Practices

Hamilton Pozo, Student, Centro Estadual de Educação Tecnológica Paula Souza, Brazil
 Orlando da Silva, Associate Professor, Universidade Metropolitana Unidas, Brazil
 Getulio Akabane, Professor, Centro Estadual de Educação Tecnológica Paula Souza, Brazil

This paper explores the implementation of lean production practices are influenced by performance goals of operations strategy. Fifty-six companies in the auto parts industry, divided into four strategic groups. The results suggest that consideration of strategic groups and how performance objectives can define lean manufacturing practices adopted by manufacturing companies.

204	Saturday, 01:45 PM - 03:15 PM, M104	<i>Track:</i> Marketing and OM Interface
	<i>Session:</i> Distribution Channel Choice and Product Returns	
	<i>Chair(s):</i> Paolo Letizia	

051-0949 The Impact of Product Returns on a Dual-Channel Supply Chain Design

Paolo Letizia, Assistant Professor, Erasmus University Rotterdam, Netherlands
 Terry Harrison, Professor, Penn State University University Park, United States

When products are sold over Internet consumers are uncertain about product fit. The manufacturer has to strategically design the sale channel for his product as consumers uncertainty leads to product return. We show that sale channel design depends on consumers product expected value and manufacturer's salvage value.

051-0610 System Component Bundling: Competition, Variety and Channel Choice

Kunpeng Li, Assistant Professor, Utah State Univ, United States
 Dilip Chhajed, Professor, University of Illinois Urbana-Champaign, United States
 Suman Mallik, Associate Professor, University of Kansas, United States

We study two popular business models for products composed of hardware and operating systems, such as smart phones, computer tablets, etc. In a competitive setting, we investigate the factors, such as product variety and production cost, that influence a firm's optimal model choices when entering the competition.

051-0565 Bundling of Vertically Differentiated Products in a Distribution Channel

Minghui Ma, Student, University of Kansas, United States
 Suman Mallik, Associate Professor, University of Kansas, United States

Consider a manufacturer producing two products, a basic and a premium one. If desired, a bundle of the two products might also be produced. Using a game theoretic model we compare and contrast manufacturer versus retailer bundling strategies and explore the properties of the equilibrium.

051-0991 Product Recalls, Offshore Manufacturing and Firm Performance

Yan Dong, Assistant Professor, University of Maryland, United States
 Kefeng Xu, Associate Professor, University of Texas San Antonio, United States
 Sining Song, Student, Arizona State University Phoenix, United States

This research examines how a firm's product recall influences consumer purchase decisions and firm profit. Our theoretical and empirical analyses indicate that recalls may increase consumer willingness to buy the product and therefore firm profitability. We also show that offshoring may have a moderating effect on the impact of recall.

206	Saturday, 01:45 PM - 03:15 PM, International 2	<i>Track:</i> General Track
	<i>Session:</i> Quality Systems and Supply Chains	
	<i>Chair(s):</i> J N D Gupta	

051-0570 IT Outsourcing and Firm Performance: A Meta-Analysis

Olajumoke Awe, Student, University of Texas Arlington, United States

Nisha Kulangara, Student, University of Texas Arlington, United States

The pros and cons of outsourcing has gained increasing attention over the past two decades. The research question on the relationship between IT outsourcing and firm performance is still at crossroads. To address this question, we conducted a meta-analysis to investigate this relationship and discuss the future research implications.

051-1307 Exploring the Relationship between Marketing and Supply Chains Risk Management

Manying Qiu, Associate Professor, Virginia State University, United States

Yaquan Xu, Assistant Professor, Georgia Gwinnett College, United States

Advanced technology offers opportunities for marketing and supply chains, but also empowers consumers with search and bargaining power. We attempt to explore the relationship between marketing and supply chains risks; identify, assess and manage the reward and risk involved in marketing and SCM strategies in the complex global business environment.

051-0759 Critical Factors of Success for Quality and Food Safety Management: Classification and Prioritization

Hamilton Pozo, Student, Centro Estadual de Educação Tecnológica Paula Souza, Brazil

Aurimar França, Professor, Faccamp - Faculdade Campo Limpo Paulista, Brazil

Getulio Akabane, Professor, Centro Estadual de Educação Tecnológica Paula Souza, Brazil

Washington Luiz Soares, Student, UNISANTA - UNIVERSIDADE SANTA CECÍLIA, Brazil

The objective of this research is to examine the existing literature on quality management systems and food safety management systems and prioritize the critical success factors that affect these systems to help researchers and food industry managers in decision making and prioritization of actions in projects related to the topic.

051-1080 The Importance of Plant Location Decision in Global Commodity Chains

Ronald Silva, Professor, UNIMAT, Brazil

Luciana Vieira, Associate Professor, UNISINOS, Brazil

Rafael Teixeira, Student, UNISINOS, Brazil

Andrew Finger, Associate Professor, Universidade Federal de Alagoas, Brazil

The purpose of this paper is to investigate the strategic reasons for plant location decision in commodity chains. The study uses case studies of MNC from commodity chain in a developing country. The findings indicate the strategic importance of site location and the role of each plant in the chain.

051-1049 The Quality Attributes for Organic Food: Exploratory Factor Analysis.

Cristiane Anacleto, Student, Universidade Federal De Santa Catarina, Brazil

Edson Paladini, Associate Professor, Universidade Federal De Santa Catarina, Brazil

The aim of this study is to identify the sensory attributes and organic food packaging characteristics that are relevant to the consumers of those products: the sensory attributes, essential information contained in the package, organic certification according to food taste and the presence of the word organic on the package.

207

Saturday, 01:45 PM - 03:15 PM, International 3

Track: Scheduling and Logistics

Session: Classroom Activities for Scheduling and Logistics

Chair(s): Charles Munson

051-1278 Logistics in Action - Building a Bridge for Successful Entrepreneurship

Amy Zeng, Professor, School of Business, United States

Entrepreneurship is rarely covered in a supply chain/logistics class, and yet the two subjects are interrelated. This talk describes a class project that enables both undergraduate and graduate students to experience how to design supply chain and logistics channels for bringing real new products or technologies to potential global markets.

051-1311 An Aggregate Planning Exercise

Kelly Alvey, Lecturer, Old Dominion University, United States

A classroom exercise with aggregate planning will be demonstrated. Groups of 3-4 students come to the front of the classroom and are given modification problems: perishability along routes or at warehouses, shrinkage at other points, certain percentages available to meet demand for each period, and other timing issues.

051-1309 Demonstrating JIT with Paper Airplanes

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

A lighthearted exercise with six students will be demonstrated that compares push vs. pull production systems. Two separate assembly lines will make paper airplanes along with intermittent singing by the students to hold the attention of the audience.

208

Saturday, 01:45 PM - 03:15 PM, International 4

Track: Behavior in Operations Management

Session: Human Behavior and Processing Times

Chair(s): Kenneth Schultz

051-0045 When does the Devil Make Work ? An Empirical Study of the Impact of Workload on Worker Productivity

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

Serguei Netessine, Emeritus Professor, INSEAD, France

Abstract We analyze a large, detailed operational data set from a restaurant chain to shed new light on how workload (defined as the number of tables or diners that a server simultaneously handles) affects servers' performance (measured as sales and meal duration). We use an exogenous shock - the implementation

051-0195 Making the Right Pick: Aligning Order Picking Methods, Incentives and People for Performance

Jelle De Vries, Student, Rotterdam School of Management, Netherlands

Rene De Koster, Professor, Erasmus University Rotterdam, Netherlands

Daan Stam, Associate Professor, Erasmus University Rotterdam, Netherlands

We investigate order picking performance (in terms of throughput, quality, and job satisfaction) of different manual picker-to-parts order picking methods under different pay systems for different types of individuals. We use a controlled field experiment and find that the combination of pick method, incentive structure, and personality influences performance substantially.

051-1281 Docs Under Load: State-Dependent Service Times in the Emergency Department

Bob Batt, Assistant Professor, University of Wisconsin Madison, United States
Christian Terwiesch, Professor, University of Pennsylvania, United States

We explore the impacts of system crowding on the clinical behavior of care providers in an emergency department. We focus on diagnostic test ordering behavior and nurse/patient interaction time.

051-1237 A General Framework for the Influence of Load on Service Time

Mohammad Delasay, Student, University of Alberta, Canada
Armann Ingolfsson, Associate Professor, University of Alberta, Canada
Kenneth Schultz, Associate Professor, Air Force Institute of Technology, United States
Bora Kolfal, Associate Professor, University of Alberta, Canada

We propose a framework that explains how system load drives mechanisms that change service times. We validate the framework by showing that previous empirical researches on the dependence of service times on load fit the framework. We use the framework to analyse service times of an emergency medical system.

051-1295 Should I stay or Should I Go? How the Ordering of Negative Information Biases the Estimation of Waiting Time

Kenneth Younge, Assistant Professor, Purdue University, United States
Masha Shunko, Assistant Professor, Purdue University, United States
Yaroslav Rosokha, Assistant Professor, Purdue University, United States

We design and conduct an experiment to investigate agents decision to abandon the queue when the processing time is ambiguous and waiting time is costly. We compare performance of behavioral and rational models based on the in- and out- of sample predictive power criteria.

209

Saturday, 01:45 PM - 03:15 PM, International 5

Track: Supply Chain Contracting

Session: Collaboration and Information Asymmetry in Supply Chains

Chair(s): Foad Iravani

051-0047 Gray Markets, Contracts and Supply Chain Coordination

Foad Iravani, Assistant Professor, University of Washington, United States
Hamed Mamani, Assistant Professor, University of Washington, United States
Reza Ahmadi, Professor, University of California Los Angeles, United States

The diversion of genuine products to unauthorized gray markets is a challenges for many companies. Our analysis shows that gray markets significantly impact the performance of classic contracts. We propose price-dependent contracts to coordinate the supply chain in the presence of gray market, provide comparative statics, and discuss consumer welfare.

051-0847 Effect of Bargaining Power, Cost Structure and Information Asymmetry on Product Quality in Outsourcing

Narendra Singh, Student, Georgia Institute of Technology, United States
Stylianios Kavadias, Professor, University of Cambridge, United Kingdom
Ravi Subramanian, Associate Professor, Georgia Institute of Technology, United States

We examine effect of bargaining powers and cost structures of an OEM and a supplier on the product quality and the outsourcing when the OEM has a backup option of manufacturing the product. We also study the impact of information asymmetry about cost structure between the OEM and the supplier.

051-1125 Strategic Outsourcing under Dynamic Information Asymmetry

Long Gao, Assistant Professor, University of California Riverside, United States
Elodie Adida, Assistant Professor, University of California Riverside, United States

We study a procurement problem where the supplier's private capability is dynamically evolving. The buyer commits to a long-term contract for profit-maximizing. We show that the optimal contract spreads out the needed distortions over time to limit information rents. The contract is asymptotically efficient and easy to implement.

051-1225 Designing Supply Contracts in a Two-echelon Supply Chain with Information Asymmetry

Zahra Mobini Dehkordi, Student, Erasmus University Rotterdam, Netherlands
Wilco van den Heuvel, Associate Professor, Erasmus University Rotterdam, Netherlands
Albert Wagelmans, Professor, Erasmus University Rotterdam, Netherlands

In a two-echelon supply chain consisting of a supplier and retailer, we formulate and analyze the design of the supplier's optimal contracts with the assumption that the retailer possesses private information about customer demand and his cost structure, and the supplier only knows the probability distribution of this private information.

051-0051 Rent Contracts between Co-Stores

Nagihan Comez Dolgan, Assistant Professor, Bilkent University, Turkey
Lama Moussawi Haidar, Assistant Professor, American University of Beirut, Lebanon

Our purpose is to investigate how two retailers can set-up a percentage-revenue rent contract that would help both parties to boost their sales efforts. We show that a linear contract can achieve second-best, but not first best solution. We investigate when the landlord should go under such a contract.

210

Saturday, 01:45 PM - 03:15 PM, International 6

Track: Service Operations

Session: Innovations in Service Operations Research

Chair(s): Sriram Venkataraman

051-0672 Leveraging the Entrepreneurship of Retail Outlets for Firm-wide Innovation

Jeff Shockley, Assistant Professor, College of Charleston, United States
Tobin Turner, Assistant Professor, Presbyterian College, United States

This study uses survey data collected from a retail franchise system to examine how perceived justice - or fairness - and relational capital helps manage the inherent conflict firms face between the need for corporate operational control, and the desire for more entrepreneurial passion to drive innovation across chain store networks.

051-0897 Achieving the Triple Aim of Quality, Experience, and Cost Efficiency

Sriram Venkataraman, Assistant Professor, University of South Carolina, United States
Aleda Roth, Professor, Clemson University, United States
Anita Tucker, Associate Professor, Harvard University, United States

We identify the set of U.S. acute care hospitals that have high relative efficiency on three dimensions of cost efficiency, clinical quality efficiency and patient experience efficiency and their antecedents. We also contrast our findings with U.S. News rankings and their set of Honor Roll Hospitals.

051-0888 Managerial and Employees' Perceptions of Improvisation in Service Settings: A Multigroup Analysis

Enrico Secchi, Assistant Professor, Gustavson School of Business, Canada
Aleda Roth, Professor, Clemson University, United States
Rohit Verma, Professor, Cornell University, United States

This paper tests a model of antecedents and consequences of Service Improvisation Competence-the ability of service delivery employees to promptly deviate from established processes when needed-across samples of hotel managers and employees. We find a mismatch between the intended effect of design choices and their realization during the service encounter.

211

Saturday, 01:45 PM - 03:15 PM, International 7

Track: Supply Chain Management

Session: Interface of Operations and Finance

Chair(s): Guoming Lai

051-0149 Stocking More vs. Less: The Roles of Demand Volatility and Profit Margin under Market Valuation

Guoming Lai, Assistant Professor, University of Texas Austin, United States
Wenqiang Xiao, Assistant Professor, New York University, United States

We study the effects of asymmetric information of forecasting capability on the inventory decision of a public firm whose manager cares about the firm's short-term market value. We find that both separating and pooling equilibria can arise and the firm may either overstock or understock inventory.

051-0178 An Analysis of Inventory Financing Cost and Performance

Qi Wu, Assistant Professor, Case Western Reserve University, United States
Kumar Muthuraman, Associate Professor, University of Texas Austin, United States
Sridhar Seshadri, Professor, Indian School of Business, India

In this paper, we propose a structural model to identify the effect of the capital holding cost in inventory decisions. We test and quantify the effect of a carefully-defined capital holding cost on inventory performance, by considering an inventory system with access to additional avenues of financing.

051-0508 How Fast Should a Cash Constrained Firm Grow? Strategies that Balance Growth and Survival

Yasin Alan, Assistant Professor, Vanderbilt University, United States
Vishal Gaur, Professor, Cornell University, United States

A cash-constrained firm has to balance growth and survival when making its operational and borrowing decisions. We study the operational implications of this trade-off in a finite horizon cash-constrained inventory model with non-stationary demand, which is a function of the firm's past order quantities.

051-1035 Utility Retail Contracts to Monetize Residential Solar Diffusion

Sebastian Souyris, Student, University of Texas Austin, United States
Guoming Lai, Assistant Professor, University of Texas Austin, United States

Distributed generation (DG) is in a path to reach electricity production cost similar to traditional generation. But utilities oppose DG because it is new competition. How can utilities be aligned with DG? In this talk we describe the problem and present alternative contracts between utilities and households that benefit both.

212

Saturday, 01:45 PM - 03:15 PM, International 8

Track: Supply Chain Management

Session: Inventory and Production Management in Supply Chains

Chair(s): Zhi-Long Chen

051-1332 Effective Heuristics for Multi-Item Single Source Ordering Problem with Transportation Cost

Saravanan Venkatachalam, Student, Texas A&M University College Station, United States
Arunachalam Narayanan, Assistant Professor, University of Houston, United States

We consider single source multi-item uncapacitated lot sizing problem with transportation cost. We propose a local search and a simulated annealing meta-heuristic for the problem. We report the performance of the heuristics with a direct solver. We also provide an extension to our heuristic to address stochastic demand.

051-1213 Integrated Production and Two-stage Distribution Scheduling

Zhi-Long Chen, Professor, University of Maryland, United States
Lixin Tang, Professor, Northeastern University, China
Feng Li, Student, Northeastern University, China

Motivated by applications in the steel industry, we study an integrated scheduling model of production and two-stage transportation. We give dynamic programming algorithms for problems with a single production line, and propose heuristics and analyze their worst-case performance for problems with multiple production lines.

- 051-1110** An Integrated Location and Inventory Problem with Multiple Newsvendors
 Jianing Zhi, Student, University of Alabama Tuscaloosa, United States
 Burcu Keskin, Associate Professor, University of Alabama Tuscaloosa, United States

For an integrated location-inventory problem with multiple newsvendors, we consider decentralized and centralized decision making. In the decentralized model, retailers are served directly from a supplier. In the centralized model, a new warehouse is considered to utilize risk pooling. We identify the conditions that impacts the expected profits and decisions.

- 051-0390** Local versus Central Inventory Ordering under Asymmetric Forecast Information
 Eirini Spiliotopoulou, Student, European Business School, Germany
 Mustafa Cagri Gurbuz, Professor, Zaragoza Logistics Center, Spain
 Karen Donohue, Associate Professor, University of Minnesota, United States

A firm operates in two independent markets and holds inventory centrally. More accurate demand information is locally available. We study a) the impact of inventory decision rights placement (locally- vs-centrally) on inventory and profits and b) whether quantity commitments align incentives so that, in case of centralized ordering, truth-telling is an equilibrium.

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| 213 | Saturday, 01:45 PM - 03:15 PM, International 9 | Track: Sustainable Operations |
| | Session: Empirical Research in Sustainable Operations | |
| | Chair(s): Brian Jacobs | |

- 051-0225** Dexterity in Operations Efficiency and Social Responsibility: Effects on Financial Performance
 Brian Jacobs, Assistant Professor, Michigan State University, United States
 Richard Kraude, Student, Michigan State University, United States
 Sriram Narayanan, Assistant Professor, Michigan State University, United States

We explore the relationship between operational performance and Corporate Social Responsibility (CSR) performance for US manufacturing firms. Employing DEA, we develop an efficiency measure that considers various productivity measures. We also use DEA to develop an efficiency measure that considers performance on different facets of CSR.

- 051-0364** The Effect of Buyer Actions and Asset Specificity on Supplier Investment in Pollution Prevention and Control
 Tracy Johnson-Hall, Assistant Professor, College of William & Mary, United States
 Murat Kristal, Associate Professor, York University, Canada
 Olga Kaminer, Assistant Professor, York University, Canada
 Markus Biehl, Associate Professor, York University, Canada
 Ashwin Joshi, Associate Professor, York University, Canada

We study the effects of buyer actions on supplier investments in environmental technologies through the lens of relational exchange theory, considering the potential role of asset specificity. We find support for asset specificity as a mechanism between collaborative buyer activities and supplier investments in pollution prevention and pollution control.

- 051-0782** Metrics for Sustainable Operations
 Aleda Roth, Professor, Clemson University, United States
 Remi Charpin, Student, Clemson University, United States

In this session, we discuss performance metrics for evaluating sustainability in operations. Metrics are discussed at three organizational levels: operation, enterprise and supply chain.

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| 214 | Saturday, 01:45 PM - 03:15 PM, International 10 | Track: Humanitarian Operations and Crisis Management |
| | Session: Network Design Applications in Humanitarian Operations | |
| | Chair(s): Melih Celik | |

- 051-0805** Realistic Pre-Disaster Planning in Humanitarian Supply Chains
 Reut Noham, Student, Tel Aviv University, Israel
 Michal Tzur, Professor, Tel Aviv University, Israel

Existing HL models adopt global optimization approaches, which may not be attainable, due to actual decisions made by practitioners and the local population. We develop models that overcome this limitation, and demonstrate how to solve medium size problems. Our results demonstrate that network design decisions are sensitive to post-disaster planning.

- 051-1202** A Decision Support Tool for Post-Disaster Debris Operations
 Melih Celik, Student, Georgia Institute of Technology, United States
 Ozlem Ergun, Associate Professor, Georgia Institute of Technology, United States
 Pinar Keskinocak, Professor, Georgia Institute of Technology, United States
 Alvaro Lorca, Student, Georgia Institute of Technology, United States

Effective management of post-disaster debris removal is crucial due to the size, cost, and complicated nature of the problem. In this talk, we present a decision support tool that addresses pre- and post-disaster debris removal decisions regarding processing facility location, process selection and flow of the debris.

- 051-0784** Quantifying the Impact of Decentralization through Robust Optimization
 Luke Muggy, Student, Kansas State University, United States

Humanitarian operations are often characterized by decentralized decision making, in contrast to centrally coordinated actions. This research quantifies the impact of decentralized facility location decisions on beneficiary access to care using a dynamic, robust facility location model as a centralized benchmark. Applications to Haiti cholera treatment facility location are described.

- 051-0907** Identifying Points of Supply Consolidation for Effective Provision of Relief Using Uncongested Transport Links
 Guven Ince, Student, University of Massachusetts Amherst, United States
 Agha Ali, Professor, University of Massachusetts Amherst, United States

We make use of optimization methodology to reveal the dependence of timely provision of relief to populations in rehabilitation sites on the selection of points of supply consolidation. The optimization framework is demonstrated for the provision of supplies to affected populations in the aftermath of a catastrophic earthquake in Istanbul.

215	Saturday, 01:45 PM - 03:15 PM, International B <i>Session:</i> Multilevel Learning Issues <i>Chair(s):</i> Aravind Chandrasekaran	<i>Track:</i> Learning and Knowledge Management in OM
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051-0446 Forward versus Feedback Knowledge Transfer in a Three-stage New Product Development Project

Wenli Xiao, Assistant Professor, University of San Diego, United States
 Cheryl Gaimon, Professor, Georgia Institute of Technology, United States
 Janice Carrillo, Associate Professor, University of Florida, United States

We introduce a dynamic model that characterizes linkages among three stages of engineering activities in an NPD project. Through knowledge transfer from a source to recipient stage, the manager enhances the recipient's knowledge development (KD) capabilities. We examine how the effectiveness of KD and feedback impact the manager's strategies.

051-0175 Non-targeted Learning: Bias Reinforcement, Challenge Degradation and Dissonance Deconstrainment

Elliot Bendoly, Associate Professor, Emory University, United States

The vast majority of discussions regarding the role of learning in management settings have focused on the benefits gained through learning. However not all learning benefits organizations in ways they would desire. This talk will discuss evidence and implications of three forms of such non-targeted learning.

051-0548 The Impact of Learning-Curve Heterogeneity and Tightly Coupled Team Familiarity on Orthopedic Procedure Times

Michael Lapré, Associate Professor, Vanderbilt University, United States
 David Moore, Fellow, Stanford University, United States

We study learning curves for orthopedic procedure times. We find that learning-curve heterogeneity exists for both individual experience and team experience, whereas organizational experience is not significant. Contrary to prior studies, we find that learning from team experience depends on familiarity between team members who have to closely coordinate tasks.

051-0057 Functional Dominance in Cross-Functional Teams

Manoj Malhotra, Professor, University of South Carolina, United States
 Sanjay Ahire, Professor, University of South Carolina, United States
 Guangzhi Shang, Student, University of South Carolina, United States

We study the negative impact of functional dominance on psychological safety of a cross-functional team and ultimately its performance. We also discuss how the careful choice of a team leader could mitigate this negative impact.

216	Saturday, 01:45 PM - 03:15 PM, International C <i>Session:</i> Empirical Studies on Supply Chain Risk Management <i>Chair(s):</i> Rommert Dekker	<i>Track:</i> Supply Chain Risk Management
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051-0791 Managing Risk in Upstream Supply Chain, Empirical Evidence from Arab Countries

Zainab Al-Balushi, Assistant Professor, Sultan Qaboos University, Oman
 Asma Alzidi, Assistant Professor, Sultan Qaboos University, Oman

This study presents a model of supply risk management based on resource dependence theory perspectives. Supply risk was contemplated as a transformation process based on input outcomes dimensions of causal events (as input) and negative consequences and reactions (as outcome). Empirical evidence is provided from four supply failure case studies.

051-0915 An Empirical Investigation into the Drivers of Supply Chain Disruptions

Denis Huebner, Student, Swiss Federal Institute of Technology Zurich, Switzerland
 Christoph Bode, Assistant Professor, Tilburg University, Netherlands
 Stephan Wagner, Professor, Swiss Federal Institute of Technology Zurich, Switzerland

We propose a model, grounded in normal accident theory, that links the characteristics of a firm's supply chain with the risk of supply chain disruptions. The hypotheses are tested on a data set received from a survey among supply chain professionals within the United States and Europe.

051-0917 An Evaluation of Global Markets' Entrance Risks regarding Various Industries

Maryam Parsaei, Reader, University of Surrey- Surrey- United Kingdom, Iran (Islamic Republic of)
 Mahdi Abbasi, Reader, Saman Aria Petroleum Eng. Co. , Iran, Iran (Islamic Republic of)

In order to assess global markets' entrance risks, current paper has utilized SWOT technique to identify indicators, priority and related correlation by studying 300 companies from 10 different industries. Following that, ANP TOPSIS method would rank the recognized risks based on results in the first step and experts' point view.

051-0980 Supplier Failure Forecasting using the Proportional Hazards Model

Rommert Dekker, Professor, Erasmus University Rotterdam, Netherlands
 Mustafa Hekimoglu, Student, Erasmus University Rotterdam, Netherlands

Supplier failure occurs when suppliers stop producing spare parts, which causes much problems for asset owners. In this paper we show for aircraft parts that supply performance characteristics like increasing leadtime and reducing demand are good predictors of when a supplier may fail.

051-0927 Supply Chain Risk Management: The Current Stage of Research

Josue Ferreira Neto, Student, Fundacao Getulio Vargas, Brazil
 Susana Pereira, Associate Professor, Fundacao Getulio Vargas, Brazil

The purpose of this article is to understand the research on SCRM. A search was performed on three different databases. Results indicate an increase in the number of publications as well as a change in the research's main issues. Approximately half of the articles are descriptive, followed by empirical studies.

217	Saturday, 03:30 PM - 05:00 PM, A601	<i>Track:</i> OM Practice
	<i>Session:</i> POMS Practice Leaders Semi Plenary Session: Trends / Innovations in Operations	
	<i>Chair(s):</i> Christopher Tang Felipe Caro	

051-1445 Innovations in Operations

Derek Powell, Senior Vice President, Strategic Planning & Development, Sony, United States
Dirk de Waart, Partner, Management Consulting, PricewaterhouseCooper, United States

Presenters from Sony and PricewaterhouseCooper will give presentations on Innovations in Operations at their respective companies. From Sony, we will hear about the importance of harnessing new innovations and technology to partner with content providers and direct-to-consumer content aggregators. The goal is to create consumer experiences that help marketers monetize media content and merchandise. From PricewaterhouseCooper, we will hear about the importance of Big Data management, and the struggle for many companies to make better decisions with this information.

218	Saturday, 03:30 PM - 05:00 PM, A602	<i>Track:</i> Supply Chain Management
	<i>Session:</i> Supply Chain College Student Paper Competition	
	<i>Chair(s):</i> John Gray Dorothee Honhon	

051-0414 Milking the Quality Test: Improving the Milk Supply Chain under Competing Collection Intermediaries

Liyang Mu, Student, University of Texas Dallas, United States
Milind Dawande, Professor, University of Texas Dallas, United States
Xianjun Geng, Associate Professor, University of Texas Dallas, United States
Vijay Mookerjee, Professor, University of Texas Dallas, United States

We examine operational and incentive issues that reduce milk quality, via deliberate adulteration by milk farmers, under competing collection stations. Two recommendations are provided to reduce adulteration using minimal testing. Both achieve a socially-beneficial equilibrium outcome: All farmers provide high-quality milk and each competing station only conducts one mixed test.

051-1453 Multi-Echelon Inventory Management with Short-term Commitments

Joel Goh, Student, Stanford University, United States
Evan Porteus, Emeritus Professor, Stanford University, United States

We extend the Clark-Scarf multi-echelon inventory model to include short-term commitments, including (1) non-binding commitments, (2) binding commitments to processing in the next period, and (3) binding commitments to processing that begins this period and takes two periods to complete. We show that generalized base-stock policies are optimal.

051-1454 Information Sharing in Supply Chains: An Empirical and Theoretical Valuation

Ruomeng Cui, Student, Kellogg School of Management, United States
Gad Allon, Professor, Kellogg School of Management, United States
Achal Bassamboo, Associate Professor, Northwestern University, United States
Jan Van Mieghem, Professor, Northwestern University, United States

We study the value of sharing downstream sales information to improve upstream forecast accuracy in a supply chain. While the literature suggests zero value of information sharing for over half of our studied products, our empirical observations show significant accuracy improvements for all products. We develop a new theoretical model, which reconciles the gap.

051-1455 Operational Advantages and Optimal Design of Threshold Discounting Offers

Simone Marinesi, Student, INSEAD, France
Karan Girotra, Assistant Professor, INSEAD, France
Serguei Netessine, Professor, INSEAD, France

Inspired by Groupon, this study examines how Threshold-Discounting offers - the idea to offer a discounted deal to customers conditional on enough of them subscribing to it - can significantly boost operational performance and profit by improving capacity utilization. With these offers, strategic customer behavior is beneficial to the firm!

219	Saturday, 03:30 PM - 05:00 PM, A701	<i>Track:</i> Closed Loop Supply Chains
	<i>Session:</i> Panel: Product Recalls in the Food Industry	
	<i>Chair(s):</i> Rachna Shah	

051-0778 Panel on Recalls and Quality Risks in the Food Supply Chain

Aleda Roth, Professor, Clemson University, United States
Tracy Johnson-Hall, Assistant Professor, College of William & Mary, United States
Manpreet Hora, Assistant Professor, Georgia Institute of Technology, United States

With the fragmentation of industry regulations and increased globalization as well as demographic trends, food recalls are likely to continue to be a serious public health and supply chain management issue. The panel will discuss antecedents of food recalls, public responses, methods for evaluating recall effectiveness, and a research agenda.

220	Saturday, 03:30 PM - 05:00 PM, A702	<i>Track:</i> Learning and Knowledge Management in OM
	<i>Session:</i> Learning in Supply Chains	
	<i>Chair(s):</i> Adrian Choo	

051-1438 Learning in Supply Chains

Adrian Choo, Assistant Professor, Georgia State University, United States

The panel will present perspectives of the current state of research about learning in supply chains and the potential opportunities/ideas for future research. The discussion will touch on various aspects of the research topic such as learning curve, implications for operations management, manufacturing versus service contexts, data collection, methodologies, and levels of analysis. Panelists: Anupam Agrawal, KC Diwas, Sriram Narayanan, Enno Siemsen Facilitator: Adrian Choo

221	<p>Saturday, 03:30 PM - 05:00 PM, A703</p> <p><i>Track:</i> Sustainable Operations</p> <p><i>Session:</i> Sustainability Projects and CSR</p> <p><i>Chair(s):</i> Anju Singh</p>
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- 051-0357** The Relationship among Practices, Competences and Performance: An Empirical Study
 Leonardo Maia, Professor, UNIVERSIDADE FEDERAL DE UBERLANDIA, Brazil
 Ely Paiva, Associate Professor, Fundacao Getulio Vargas, Brazil

Based on the resource-based theory, it was proposed a model that evaluates the relationship between socio-environmental practices and operational capabilities in order to achieve operational objectives. The sample had 170 manufacturing firms and data were analyzed with SEM. The results supported that resources mediate these relationship and increase performance.

- 051-1394** Clean Development Mechanism (CDM) in Small and Medium Scale Enterprises and Use of Bundling Projects
 Anju Singh, Associate Professor, National Institute of Industrial Engineering, India
 Mayuri Naik, Student, National Institute of Industrial Engineering, India
 Indrayani Nimkar, Student, National Institute of Industrial Engineering, India
 Seema Unnikrishnan, Professor, National Institute of Industrial Engineering, India
 Neelima Naik, Professor, National Institute of Industrial Engineering, India

The transaction cost associated with the development of CDM project is a serious barrier to many small scale projects due to which these face difficulties in attracting international CDM investors. Therefore, projects having similar context are bundled together to form single CDM project. This paper presents 92 CDM bundling projects registered and issued till December 2013 worldwide out of which India has 26 projects. Grid connected electricity generation, fossil fuels switching, thermal energy production, methane recovery, and energy efficiency are some of the methodologies used in energy industries, wind power, biomass, biogas, hydro-power, fuel switch and energy efficiency sectors.

- 051-1392** Role of Clean Development Mechanism (CDM) in Fugitive Emissions Reduction
 Anju Singh, Associate Professor, National Institute of Industrial Engineering, India
 Indrayani Nimkar, Student, National Institute of Industrial Engineering, India
 Mayuri Naik, Student, National Institute of Industrial Engineering, India
 Bhagyashree Sawant, Student, National Institute of Industrial Engineering, India
 Seema Unnikrishnan, Professor, National Institute of Industrial Engineering, India
 Neelima Naik, Professor, National Institute of Industrial Engineering, India

Fugitive emissions create negative impacts on productivity, environment & health and form 16% of total greenhouse gas emissions worldwide. To minimize the impacts of the above, 248 projects (leading to 149631082 metric tons of CO2 equivalent emission reduction) have been implemented worldwide under the Clean Development Mechanism (CDM) of the Kyoto Protocol. This paper presents a critical analysis of all projects and their 17 methodologies in use.

- 051-0931** Management Practices for Sustainability and Business Performance: An Analysis of the Size Influence
 Clandia Gomes, Professor, Santa Maria Federal University, Brazil
 Jordana Kneipp, Student, Santa Maria Federal University, Brazil
 Isak Kruglianskas, Professor, University of São Paulo, Brazil
 Roberto Bichueti, Student, Santa Maria Federal University, Brazil
 Luciana Aparecida Barbieri, Student, Santa Maria Federal University, Brazil

This study has the objective to analyze the relationships between management practices for sustainability and business performance, according to the size of companies in the mining sector. The main results show that the larger companies have higher levels of adoption of management practices for sustainability and business performance.

222	<p>Saturday, 03:30 PM - 05:00 PM, A704</p> <p><i>Track:</i> Retail Operations Management</p> <p><i>Session:</i> Retail Operations</p> <p><i>Chair(s):</i> Kumar Rajaram</p>
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- 051-0272** Stockout-Based Substitution and Inventory Planning in Textbook Retailing
 Joonkyum Lee, Student, Cornell University, United States
 Vishal Gaur, Professor, Cornell University, United States
 Suresh Muthulingam, Assistant Professor, Cornell University, United States
 Gary Swisher, Officer, Cornell University, United States

We develop a utility-based choice model that incorporates stockout-based substitution for the Cornell University bookstore to estimate demand and plan inventory for textbooks in the presence of consumer choice and stockout-based substitution. In a controlled pilot experiment we show that our model achieves 10% increase in profits over existing processes.

- 051-0305** The Retail Planning Problem under Demand Uncertainty
 Kumar Rajaram, Professor, University of California Los Angeles, United States
 George Georgiadis, Assistant Professor, Boston University, United States

We model the retail planning problem in which the retailer chooses suppliers and determines the production, distribution, and inventory planning for products with uncertain demand to minimize total expected costs. We solve this problem by developing computationally tractable methods and provide managerial insights.

- 051-0682** Franchise Contracting with Debt Financing and Bankruptcy Risk
 Volodymyr Babich, Associate Professor, Georgetown University, United States
 Christopher Tang, Professor, University of California Los Angeles, United States

We study how a franchise contract should account for the entrepreneur's financing need, the entrepreneur's bankruptcy probability, and bankruptcy costs, using a stochastic dynamic game among the franchisor, the entrepreneur, and the banks. The ramifications of ignoring financing considerations are delays in a store opening and higher entrepreneur's bankruptcy probability.

- 051-0864** Impact of Congestion in the Fitting Room: Evidence from a Field Experiment
 Saravanan Kesavan, Assistant Professor, University of North Carolina Chapel Hill, United States
 Hyun Seok Lee, Student, University of North Carolina Chapel Hill, United States
 Vinayak Deshpande, Associate Professor, University of North Carolina Chapel Hill, United States

We use unique data, which includes fitting room traffic, to study the relationship between fitting room traffic, labor, and store performance. Specifically, we analyze the impact of congestion in the fitting room on the number of transactions and the moderating role of labor using a field experiment.

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| 223 | Saturday, 03:30 PM - 05:00 PM, A705 | <i>Track:</i> Purchasing and Supply Management |
| | <i>Session:</i> New research in sourcing and procurement | |
| | <i>Chair(s):</i> Damian Beil | |

- 051-0618** The Effect of Entrant Cost Uncertainty in Procurement Auctions
 Brendan See, Student, University of Michigan Ann Arbor, United States
 Damian Beil, Associate Professor, University of Michigan Ann Arbor, United States
 Izak Duenyas, Professor, University of Michigan Ann Arbor, United States

Although an incumbent supplier may know her cost to produce an item, an entrant supplier is usually less informed. We model this scenario and allow the entrant to learn additional information at a cost. The buyer can influence the learning cost.

- 051-1056** Strategic Sourcing under Supply Yield Risk
 Lingxiu Dong, Associate Professor, Washington University St Louis, United States
 Guang Xiao, Student, Washington University St Louis, United States
 Nan Yang, Assistant Professor, Washington University St Louis, United States

In this paper, we study a price-setting monopoly firm's supply diversification problem when it faces supply yield risk. We also investigate the impact of pricing flexibility and the characteristics of suppliers profile on the firm's optimal sourcing decisions.

- 051-1255** Sourcing Decisions under Supply Risk and Scale Economies
 Fernando Bernstein, Professor, Duke University Durham, United States
 Changrong Deng, Student, Duke University Durham, United States
 Sasa Pekec, Associate Professor, The Fuqua School of Business, Duke University, United States

The interplay of non-linear costs and uncertainty limits the informativeness of supplier rankings. However, managerial guidance on which suppliers should (and should not) be considered is still possible: a supplier is only evaluated based on the best possible marginal profit contribution and its expected performance if selected as a sole-sourcer.

- 051-1241** Supply Allocation to Sustain Supplier Health
 Feryal Erhun, Assistant Professor, Stanford University, United States
 Mericcan Usta, Student, Stanford University, United States
 Warren Hausman, Professor, Stanford University, United States

Prominent buyers in research and development (R&D)-intensive industries have a long-term interest in maintaining financially healthy suppliers that sustainably invest in R&D. We demonstrate that inclusion of the buyer's financial health concerns into the buyer's procurement decisions have short-term and long-term consequences that reveal previously overlooked motives and dynamics.

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| 224 | Saturday, 03:30 PM - 05:00 PM, A706 | <i>Track:</i> Healthcare Operations Management |
| | <i>Session:</i> Best Paper Competition Finalists Presentations | |
| | <i>Chair(s):</i> Kurt Bretthauer Vikram Tiwari | |

- 051-1449** An Econometric Analysis of Emergency Patient Admission
 Diwas Kc, Assistant Professor, Emory University, United States
 Christian Terwiesch, Professor, University of Pennsylvania, United States

We analyze the flow of patients from a hospital's emergency department (ED). We estimate the extent to which lack of inpatient beds, active discharge of existing patients, and smoothing of elective patients contributes to the hospital's ability to admit ED patients.

- 051-1399** Hospital Readmissions Reduction Program: An Economic and Operational Analysis
 Dennis Zhang, Student, Northwestern University, United States
 Eric Park, Student, Northwestern University, United States
 Itai Gurvich, Assistant Professor, Northwestern University, United States
 Jan Van Mieghem, Professor, Northwestern University, United States
 Robert Young, Physician, Northwestern University, United States
 Mark Williams, Professor, University of Kentucky, United States

We take an economic and operational perspective of the Hospital Readmission Reduction Program (HRRP) to ask a simple question: assuming that hospitals are forward-looking operating-margin maximizers, does the structure of the HRRP policy provide economic incentives to all hospitals to reduce readmissions? If not, what are the challenges?

- 051-1405** Population Sampling in Dynamic Health Care Policy
 Lauren Cipriano, Assistant Professor, The University of Western Ontario, Canada
 Thomas Weber, Associate Professor, Ecole Polytechnique, Switzerland

When parameters vary across cohorts, as with hepatitis C (HCV) screening, the optimal information collection policy, for both time-varying and static parameters, may be to delay information collection. We develop a dynamic programming framework to identify optimal information collection policies and apply it to the evaluation of HCV screening.

225	<p>Saturday, 03:30 PM - 05:00 PM, A707</p> <p><i>Session:</i> Crowd-based Innovation: Central Themes and New Insights</p> <p><i>Chair(s):</i> Henry Sauermann</p>	<i>Track:</i> Product Innovation and Technology Management
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- 051-0280** Participation Dynamics in Crowd Science: The Scope and Sustainability of Interest-Based Motivation
 Henry Sauermann, Assistant Professor, Georgia Institute of Technology, United States
 Chiara Franzoni, Assistant Professor, Politecnico Di Milano, Italy

Many crowd-based projects rely on participants' "interest". However, it is not clear how strong and sustainable interest is as a source of motivation. Drawing on psychology, we discuss static and dynamic features of interest and examine individuals' participation within and across 7 crowd-science projects hosted on a shared platform.

- 051-0454** Crowd-Based Innovation
 Joel Wooten, Assistant Professor, University of South Carolina, United States

Exploring the crowd phenomenon through innovation contests, how they have evolved, and what we are learning from them. A primer for the challenges and benefits of working with crowds.

- 051-0456** Games, Tasks and Crowds: Designing Purposeful Interactions Around Stories and Play
 Nathan Prestopnik, Assistant Professor, Ithaca College, United States

One of the central challenges of crowdsourcing is, quite literally, to attract a crowd. This talk explores the challenge of designing crowdsourcing games, discussing some current approaches to gamification along with ways that crafting thematic connections between story, mechanics, aesthetics, and tasks can result in very meaningful play-work experiences.

- 051-0527** Search Behavior in Innovation Communities and Contests
 Kevin Boudreau, Assistant Professor, London Business School, United Kingdom
 Karim Lakhani, Associate Professor, Harvard Business School, United States

Crowds can be organized in the forms of communities and contests. Both of these approaches have within them different assumptions about incentives, intellectual property and the underlying innovative search process. We compare and contrast the assumptions and provide field experimental data to show the salience of the differences.

226	<p>Saturday, 03:30 PM - 05:00 PM, A708</p> <p><i>Session:</i> Production and Service Planning</p> <p><i>Chair(s):</i> Gang Li</p>	<i>Track:</i> Production Planning and Scheduling
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- 051-0205** Supply Chain Lot-Sizing Coordination Impact on Market Segmentation in a Competitive Environment
 Yu Xia, Associate Professor, Northeastern University, United States

This paper finds the influence of lot-sizing coordination, in which suppliers use pricing menu to influence buyer's logistic profiles to approach the system optimization. The result shows that for buyers with high inventory holding cost, lot-sizing coordination has almost no influence on their purchasing decision, thus the suppliers' market segmentation.

- 051-0262** Payment Incentives and Staffing to Trade off Speed and Quality in Large Service Systems
 Dongyuan Zhan, Student, University of Southern California, United States
 Amy Ward, Associate Professor, University of Southern California, United States

Human servers often must trade off serving faster to increase the volume of customers served, and serving slower to ensure customer inquiries are fully resolved. For large service systems, we explore how the system manager can influence this decision through compensation incentives and staffing.

- 051-0781** Cost Allocation in Rescheduling with Machine Unavailable Period
 Zhixin Liu, Associate Professor, University of Michigan Dearborn, United States
 Xiangtong Qi, Associate Professor, Hong Kong University of Science & Tech, Hong Kong
 Liang Lu, Lecturer, Heriot-Watt University, United Kingdom

We study a rescheduling problem where jobs need to be rescheduled to minimize a total cost when machine is unavailable for period of time, subject to a limit on the maximum time disruption. We find an optimal schedule, and investigate how to fairly allocate cost among jobs.

- 051-1169** Research on China Telecom Industry with Game Theory
 Jun Wu, Professor, Beijing University of Chemical Technology, China

In this paper, we study the mobile Internet service chain with one telecom operator and two service provider. First, we summarize up models between one telecom operator and two service providers. Then, we formulate the mathematical models by using game theory. Finally, numerical examples are given to support our model.

228	<p>Saturday, 03:30 PM - 05:00 PM, M101</p> <p><i>Session:</i> Information, Innovation and Internet</p> <p><i>Chair(s):</i> Hyoduk Shin</p>	<i>Track:</i> Information Systems
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- 051-0162** Motivating User Contributions to Online Communities: A Structural Hidden Markov Model
 Wei Chen, Student, University of California San Diego, United States
 Xiahua (Anny) Wei, Assistant Professor, University of Washington Bothell, United States
 Kevin Zhu, Professor, University of California San Diego, United States

This study develops a structural hidden Markov model (HMM) to understand user contributions to online communities. Using a public goods framework, our model characterizes the dynamics of user contributions and investigates the effectiveness of different motivation mechanisms. We estimate the model with data from a knowledge sharing platform.

- 051-0996** Cardinality Bundles for Spence-Mirrlees Reservation Prices
Karthik Kannan, Associate Professor, Purdue University, United States
Mohit Tawaramlani, Professor, Purdue University, United States
Jianqing Wu, Student, Purdue University, United States

We study pricing of cardinality bundles, where prices depend only on the size of the bundle. In our model, consumer preferences satisfy the Spence-Mirrlees' Single-Crossing Property (SCP) and consumers are restricted to buying one bundle. We provide a solution approach that guarantees optima, and can also extend to continuous models.

- 051-0634** How does Internet Quality Influence Mobile Internet Usage?
Jiao Xu, Student, Georgia Institute of Technology, United States
Chris Forman, Professor, Georgia Institute of Technology, United States
Yu Hu, Associate Professor, Georgia Institute of Technology, United States

In this paper, we examine how mobile Internet quality and fixed-line Internet quality influences consumer's mobile Internet usage. The impact of Internet (both mobile and fixed-line) quality on mobile Internet usage may be different across different categories of online activities, as mobile and fixed-line Internet may serve consumer's different needs.

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| 229 | Saturday, 03:30 PM - 05:00 PM, M102 | <i>Track:</i> Inventory Management |
| | <i>Session:</i> Assemble to order system and production scheduling | |
| | <i>Chair(s):</i> Mohsen Elhafsi | |

- 051-0373** An Assemble-to-Order System with Product and Components Demand with Lost Sales
Mohsen Elhafsi, Professor, University of California Riverside, United States
Li Zhi, Student, Ecole Centrale de Lille, France
Herve Camus, Associate Professor, Ecole Centrale de Lille, France
Etienne Craye, Professor, Ecole Centrale de Lille, France

We study an ATO system serving the demand of the end product and the components. We use an MDP framework to characterize the optimal policy that minimizes the expected lost sales and inventory holding costs. The optimal policy exhibits a feature that has not been observed in standard ATO systems

- 051-0561** Analysis of an Assemble-to-Order System with Different Review Periods
Gonul Karaarslan, Assistant Professor, Erasmus University Rotterdam, Netherlands
Ton De Kok, Professor, Eindhoven University of Technology, Netherlands
Gudrun Kiesmuller, Professor, Otto von Guericke University Magdeburg, Germany

We consider a single item assembled from two components. One of the components has a long lead time, high holding cost and short review period as compared to the other one. We analyze the system under two different policies and show how to determine the optimal policy parameters.

- 051-0969** Varying Lead Times in MRP Lot Sizing
Jan Riezebos, Associate Professor, University of Groningen, Netherlands
Xiang Zhu, Assistant Professor, University of Groningen, Netherlands

Dynamic lot sizing in MRP has focused on demand differences over time. However, procurement officers may also face dynamic-changing lead times. We present a new ordering method and show that cost reductions up to 20% are possible. We also present some fast and good-performing heuristics for use in MRP.

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| 230 | Saturday, 03:30 PM - 05:00 PM, M103 | <i>Track:</i> Manufacturing Operations |
| | <i>Session:</i> Empirical research in manufacturing operations-2 | |
| | <i>Chair(s):</i> Mario Acevedo | |

- 051-0484** FDI Success Factors: Evidence From A European Manufacturer In The Chinese Automobile Industry
Halia Valladares Montemayor, Associate Professor, Mount Royal University, Canada
Radu Pirvulescu, Student, Mount Royal University, Canada

The objective is to present Renault's FDI strategy into the Chinese car manufacturing industry. To explain how a car manufacturer can be successful in a new market. Critical success factors were identified: numerous FDIs, willingness to help the Chinese partner raise its standards and build strategic partnerships (Guanxi) with government.

- 051-0939** Design, Ergonomics and Work Conditions: Case Study of a Petroleum Refinery
Daniela Rodrigues, Assistant Professor, Universidade de Brasilia, Brazil
Joao Camarotto, Professor, Universidade Federal De São Carlos, Brazil
Andrea Fontes, Associate Professor, Universidade Federal De São Carlos, Brazil

This paper is a study of the decoking operation to analyze the cooperation between ergonomists and designers in the improvement in this workplace. The study concluded that this cooperation favored the process of revealing the real needs of those who perform the work, culminating in preventive actions to reduce risks.

- 051-1157** Adaptability of New Production Practices Trends in Emerging Markets of Latin America
Mario Acevedo, Student, Universidad Nacional Autónoma de Honduras, Honduras
Cesar Ortega, Student, Universidad Nacional Autónoma de Honduras, Honduras

Constant progress of R&D&I help creating new production practices that are standardized and profitable for world-class industries. Nevertheless, these practices must consider contingent elements of adaptation for emerging industries. In this context, this paper studies the latest trends of these practices and adaptability of emerging markets in Latin America

231	Saturday, 03:30 PM - 05:00 PM, M104	<i>Track:</i> Marketing and OM Interface
	<i>Session:</i> New Issues and Perspectives in Marketing and Operations Interface	
	<i>Chair(s):</i> Eylem Koca	

051-1116 Do Product Step-Ups Make a Difference?

Eylem Koca, Assistant Professor, Fairleigh Dickinson University, United States

A prominent manufacturer of high-tech products is offering a step-up program whereby consumers upgrade their items to better/newer items within 90 days of their purchase date, by only paying the price difference. We investigate the effects of this option on consumer behavior, product life-cycle dynamics and new product introduction decisions.

051-0793 Optimal Pricing and Rationing Decisions for Short Life Cycle Products

Arvind Sainathan, Assistant Professor, Nanyang Business School, Singapore

Fang Liu, Assistant Professor, Nanyang Technological University, Singapore

We consider a firm that sells a product with short life cycle to time-sensitive customers, and analyze how its optimal sales strategy-its pricing, rationing, and timing decisions are influenced by customer characteristics, especially delay sensitivity and heterogeneity. We also consider capacitated and uncapacitated firms to understand the role of firm's characteristics.

051-1371 Joint Inventory, Quality and Pricing Management for Deteriorating Products under Cournot Duopoly

Prashant Chintapalli, Student, Indian Institute of Management Bangalore, India

Jishnu Hazra, Professor, Indian Institute of Management Bangalore, India

In a Cournot Duopoly firms have to simultaneously manage stocking levels (and thus, price) and quality levels of a seasonally produced perishable product when it has demand over two-periods, (the season and the off-season) while replenishment happens at the beginning of the season. The firms incur cost of maintaining quality

051-1289 Using Retail Analytics to Optimize Shelf Space

Anurag Agarwal, Professor, University of South Florida, United States

James Curran, Associate Professor, University of South Florida, United States

Ramakrishna Govindu, Lecturer, University of South Florida, United States

Retailers these days are collecting a lot of data and trying to optimize limited shelf space. In this paper, we propose a theoretical optimization model for the retail shelf space problem and propose ideas on how to use data analytics to make these models work in practice.

232	Saturday, 03:30 PM - 05:00 PM, M106	<i>Track:</i> OM Practice
	<i>Session:</i> Audi in Hungary	
	<i>Chair(s):</i> Gyula Vastag	

051-1367 Planning Small Batch Ramp-Up Production at Audi Hungary

Jozsef Perger, Manager, Audi, Hungary

Gyula Vastag, Professor, Szechenyi Istvan University, Hungary

In 1993, Audi AG purchased an unfinished site of a former socialist state-owned company in Gyor, Hungary. In the last 20 years, this site has been developed into the largest engine plant in Europe with a production capacity of two million engines and an assembly of 100,000 cars per year. What is the secret of their success? How is simulation used to estimate small-batch (e.g., Lamborghini models) and ramp-up production in Gyor?

051-1363 City-University-Automotive Industry from the Perspective of Regional Economics

Janos Rechnitzer, Professor, Szechenyi Istvan University, Hungary

Tamas Toth, Professor, Szechenyi Istvan University, Hungary

Audi plant impact on Hungarian economics. What is the secret of their success? How does a city with significant industrial traditions support development of the company? What kind of conditions for growth does the local government create? What does Audi give to the city and to Széchenyi University in Gyor? How does R & D work in a geographically distributed global environment? How does the local supply network support Audi's global mission?

233	Saturday, 03:30 PM - 05:00 PM, International 2	<i>Track:</i> General Track
	<i>Session:</i> System Dynamics and Associated Applications	
	<i>Chair(s):</i> Stefan Spinler	

051-0254 Queuing-Theory-Based Macroscopic Traffic Flow Modeling

Matthias Winkenbach, Student, Whu - Otto Beisheim School of Management, Germany

Edgar Blanco, Professor, Massachusetts Institute of Technology, United States

Stefan Spinler, Professor, Whu - Otto Beisheim School of Management, Germany

We present a macroscopic traffic flow model for emerging-market megacities. M/G/C/C state-dependent queuing networks are employed to model congestion formation and traffic disruptions. Based on real-world data for Mexico City, the model is used to analyze the effect of various system improvements and policy measures on congestion and pollutant emissions.

051-0425 Two Long-Standing Systemic Conceptions

Vera Machline, Assistant Professor, Pontifical Catholic University of São Paulo, Brazil

Claude Machline, Emeritus Professor, Fundacao Getulio Vargas, Brazil

This paper shall focus on two notable systemic conceptions long antedating Bertalanffy's General Systems Theory. They are: the Platonic-Aristotelian tenet that "the whole is more than the sum of its parts"; and Livy's fable "The Belly and the Members", which touches upon human and socio-political self-regulating organisms.

051-1301 The Relation between the Evaluation of Municipal Services and the Subjective Well-Being

Leandro Prearo, Professor, Universidade Sao Caetano do Sul, Brazil

Maria Gouvea, Associate Professor, Universidade de Sao Paulo, Brazil

This study aimed to relate the evaluation of municipal services (EMS) with subjective well-being (SWB) through a sample of 1,070 individuals living in the Grande ABC Paulista, Brazil. Data showed statistically significant relationship between SWB and EMS, suggesting that public services affect the quality of the well-being of individuals.

051-0914 Problem Based Learning in Engineering: Methods of Evaluation and Difficulties in a Brazilian Discipline

Anna Paula Scheidegger, Student, Universidade Federal De Itajubá, Brazil
Camila Pinto, Student, Universidade Federal De Itajubá, Brazil
João Turrioni, Associate Professor, Universidade Federal De Itajubá, Brazil
Juliana Gaudêncio, Student, Universidade Federal De Itajubá, Brazil

This work discusses the problem-based learning approach adopted in an engineering discipline conducted in partnership between a Brazilian university (UNIFEI) and a multinational company in Brazil. It aims exploring difficulties encountered by students during the development of the project and discussing evaluation methods of the discipline.

234

Saturday, 03:30 PM - 05:00 PM, International 3

Track: Scheduling and Logistics

Session: Capacity planning and Logistics Management

Chair(s): Zhili Tian

051-0904 Modeling Urban Hazmat Transportation with Road Closure Consideration

Tijun Fan, Professor, School of Business, East China University of Science and Technology, China
Wen-Chyuan Chiang, Professor, The University of Tulsa, United States
Robert Russell, Professor, University of Tulsa, United States

An urban hazmat transportation model is formulated that minimizes hazmat risk and transportation cost subject to road closure constraints. A heuristic is proposed to solve the bi-objective hazmat vehicle routing and it is applied to a realistic case study involving hazmat transportation in the highly populated metropolitan area of Shanghai.

051-1095 Understanding Product Line Complexity through Stochastic Lot Sizing Analysis

Zhili Tian, Assistant Professor, Florida International University, United States

We formulate the problem of determining the production run lengths and sequencing the runs in continuous chemical processes with sequence-dependent changeover times and uncertain demands. We develop a sequential method to solve this planning program. Through global sensitivity analysis, we generated data for estimating the product line complexity cost models.

051-1415 The Optimal Synchronization of Average Throughput in Supply Chain Networks

Gregory Kellar, Professor, Wright State University, United States
George Polak, Professor, Wright State University, United States
Xinhui Zhang, Professor, Wright State University, United States

We propose a mode of synchronizing discrete lots practicable for crossdocking via bulk-breaking or consolidation, indicated by the equality of average throughput at steady state. We formulate an original nonlinear mixed general integer program that determines optimal order lot-sizing that indicate the relative degree of "push" or "pull" between facilities.

051-1173 Optimal Location and Capacities of Emergency Supplies for Mitigation of Earthquake Fatalities

Leo MacDonald, Assistant Professor, Kennesaw State University, United States
Jomon Paul, Associate Professor, Kennesaw State University, United States

We develop a stochastic planning model for determining the optimal location and capacity of Strategic National Stockpile warehouse and dispensing sites in earthquake prone regions. We incorporate uncertainties in earthquake magnitude and associated casualty rates and potential facility damage. We demonstrate the model via planning for the Los Angeles region.

235

Saturday, 03:30 PM - 05:00 PM, International 4

Track: Behavior in Operations Management

Session: Teaching on Behavioral and Systems Phenomena in OM

Chair(s): Elliot Bendoly

051-0298 The Use of A3 Thinking in Teaching the MBA Core Operations

Aravind Chandrasekaran, Assistant Professor, Ohio State University, United States

This presentation will discuss results from a quasi-experiment on the use of A3 thinking tool in teaching the MBA core operations class. Students benefit from quick and structured feedback and the overall learning process is improved from using this methodology. Other behavioral methods to facilitate learning process are discussed.

051-0597 Designing Work for Productivity and Motivation in the Service Sector

Karen Eboch, Senior Lecturer, Bowling Green State University, United States

Task and work flow design provides the critical link to quality and productivity. Through a classroom activity students reflect on their own minimum wage jobs in food service and retail, and methods to improve the jobs are explored. Trade-offs between operational efficiencies and motivation are explored to develop a win-win.

051-0740 Games in Behavioral Operations Management

Wout Van Wezel, Assistant Professor, University of Groningen, Netherlands

One of the issues faced in Behavioral Operations Management is its integration in core OM courses. In this, games are an indispensable tool. We will explore existing games and discuss how they can be used to demonstrate the interaction between traditional OM theory and human behavior in a classroom setting.

236	<p>Saturday, 03:30 PM - 05:00 PM, International 5</p> <p><i>Session:</i> Supply Chain: Design and Coordination</p> <p><i>Chair(s):</i> Gerd Hahn</p>	<i>Track:</i> Supply Chain Contracting
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051-0872 Is the Japanese Integrated Supply Chain Model Losing its Relevance?

Lumbidi Kupanhy, Professor, Wakayama University, Japan

We will examine why and how Japanese highly integrated supply chain model, once hailed as the dread secret weapon of the formidable competitiveness of Japanese manufacturing companies worldwide, seems to have become in recent years not only irrelevant but a source of their inefficiency in today's world of globalized business.

051-1048 The Governance as a Determinant of Development: A Brazilian Case in the Fruit Supply Chain

Ayala Braga, Assistant Professor, Universidade Federal Rural do Rio de Janeiro, Brazil

Breno Pereira, Associate Professor, Universidade Federal de Santa Maria, Brazil

The study of fruit production chain in Brazil seeks to understand the forms of interaction among economic agents, social and political as well as external forces that interfere with the process of production, processing and marketing of juices and pulps fruits proposing a conceptual management model.

051-0659 Coordinating Shareholder and (Operations) Manager: A Newsvendor Perspective

Gerd Hahn, Assistant Professor, University of Mannheim, Germany

Moritz Fleischmann, Professor, University of Mannheim, Germany

We examine the coordination problem between shareholder and (operations) manager under imperfect capital markets. Economic Value Added (EVA) as a prevalent performance metric within value-based management is applied in a newsvendor setting. Risk-adjusted weighted average cost of capital (WACC) are considered using capital asset pricing.

237	<p>Saturday, 03:30 PM - 05:00 PM, International 6</p> <p><i>Session:</i> B2B Services</p> <p><i>Chair(s):</i> Rohit Verma</p>	<i>Track:</i> Service Operations
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051-0844 Business-to-business Service Operations: A Systematic Literature Review and Content Analysis

Daniel Auler, Student, UNISINOS, Brazil

Rafael Teixeira, Student, UNISINOS, Brazil

This paper explores the main topics under investigation about B2B service operations. We developed a general model of B2B service operations to serve as a guide for our analysis. We collected data from 106 papers and perform a content analysis. Results show a series of interrelated topics and constructs.

051-0583 Understanding the Characteristics and Managerial Challenges in Professional Services

Rohit Verma, Professor, Cornell University, United States

Alistair Brandon-Jones, Associate Professor, Manchester Business School, United Kingdom

Michael Lewis, Professor, University of Bath, United Kingdom

Matthew Walsman, Student, Cornell University, United States

This study presents a best-worst (or maxdiff) survey-based assessment of consultancy services in the hospitality industry. It examines what consultants deliver (object, level of interaction and customization) for elements of a consulting service package; how these are delivered (process characteristics, labor/capital intensity, and control mechanisms); and key managerial challenges faced.

051-0331 Applying Discrete Choice Analysis in Business-to-Business Services

Bo van der Rhee, Associate Professor, Nyenrode University, Netherlands

Rohit Verma, Professor, Cornell University, United States

We present an application of discrete choice analysis for Business-to-Business services that can assist in understanding customer preferences in a competitive environment. Empirical data for this study was collected from the wide-body aircraft painting industry in Europe, the Middle East, North Africa and the Commonwealth of Independent states.

051-1318 Pricing Capability in Professional Services

Randy Napier, Assistant Professor, University of Texas Arlington, United States

Rajat Mishra, Assistant Professor, Quinnipiac University, United States

The proposed conference presentation addresses pricing capability in the context of professional service operations. The underlying research delves into an aspect of professional services that has received minimal consideration in Operations Management literature. The presentation will analyze pricing for professional services in terms of the resource-based view of the firm.

051-0893 Service and Geographic Characteristics of B2B Service Buyers: A Numerical Taxonomy of Service Firms

Rafael Teixeira, Student, UNISINOS, Brazil

Aleda Roth, Professor, Clemson University, United States

DeWayne Moore, Professor, Clemson University, United States

This paper classifies B2B service buyers in groups of different levels of service and geographic complexity and evaluates how service performance varies among these groups. We collected data from 141 service firms, run a cluster analysis, and found 5 groups of buyers with varying levels of service performance.

238	<p>Saturday, 03:30 PM - 05:00 PM, International 7</p> <p><i>Session:</i> Service Operations and Information Systems</p> <p><i>Chair(s):</i> Subodha Kumar</p>	<i>Track:</i> Information Systems
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051-0099 Operating Rooms Capacity Allocation for Multi-Class Emergency

Yiwei Huang, Student, Texas A&M University College Station, United States

Natarajan Gautam, Associate Professor, Texas A&M University College Station, United States

Chelliah Sriskandarajah, Professor, Texas A&M University College Station, United States
Xitong Guo, Associate Professor, Harbin Institute of Technology, China

In order to increase the responsiveness and efficiency for operating rooms (ORs) scheduling, we develop an approximation model which allocates ORs capacity for various priority classes of emergency patients. Fluid and diffusion models are explicitly studied in this paper to improve ORs performance and achieve multi-class emergency patients' satisfaction.

051-1009 Pricing Decisions for a Healthcare Network Service Provider

Tharanga Rajapakshe, Assistant Professor, University of Florida, United States
Subodha Kumar, Professor, Texas A&M University College Station, United States
Chelliah Sriskandarajah, Professor, Texas A&M University College Station, United States

Motivated by the operational challenges faced by a Texas based healthcare network service provider, we investigate the problem of selecting practices to join the network under two different membership types and corresponding pricing decisions. We develop two polynomial time algorithms to derive the optimum prices for the service provider.

051-0717 Operating Rooms Scheduling with Uncertain Surgery Times

Emre Demirezen, Assistant Professor, Binghamton University, United States
Subodha Kumar, Professor, Texas A&M University College Station, United States
Michael Pinedo, Professor, New York University, United States
Chelliah Sriskandarajah, Professor, Texas A&M University College Station, United States

Our model considers uncertainty in surgery durations and determines the sequence of surgeries and start times. We assume that surgeries can start right after the earlier surgeries are finished and discuss how our results applies to the general problem where surgeries cannot start before their scheduled start times.

051-1440 Recommendations Using Information from Multiple Association Rules: A Probabilistic Approach

Abhijeet Ghosal, Student, University of Illinois Urbana-Champaign, United States
Syam Menon, Associate Professor, University of Texas Dallas, United States
Sumit Sarkar, Professor, University of Texas Dallas, United States

We propose a method to improve the quality of recommendations by combining association rules using Bayesian framework. To identify best rules to combine, we use a maximum-likelihood framework to compare alternative combinations. Experiments show that our proposed approach performs better than several existing rule based and non-rule based approaches.

239

Saturday, 03:30 PM - 05:00 PM, International 8

Track: Sustainable Operations

Session: Corporate Social Responsibility

Chair(s): Tayyab Amjed

051-0011 Internet of Things: Merging Technological Advancements with Corporate Social Responsibility

Marina Mattered, Assistant Professor, Universidad Europea de madrid, Spain
Raquel Ureña, Assistant Professor, Universidad Europea de madrid, Spain

Technology, particularly Internet of Things (IoT), has become the tool that allows for higher productivity, product development, as well as social action. The present paper explores technology's role in sustainable development and how IoT allows firms to create accurate Corporate Social Responsibility actions and integrate it into the Business Strategy.

051-0426 Analysis of Corporate Sustainability Assessment Tools and Operations Management

Simone Sartori, Student, Universidade Federal De Santa Catarina, Brazil
Lucila Campos, Associate Professor, Universidade Federal De Santa Catarina, Brazil

This theoretical-conceptual study aims to analyze the tools for assessing corporate sustainability. We also intend to highlight the purpose, characteristics and shortcomings of tools relative to Triple-Bottom-Line and operations management. As a result, the literature presents some gaps in terms of addressing sustainability in operations management and the integration nature-society.

051-0636 Sustainable Supply Chain Planning: A Framework to Facilitate Economic, Environmental and Social Responsibility

Norma Harrison, Professor, Macquarie University, Australia
Tayyab Amjed, Student, Macquarie University, Australia

Sustainable supply chain planning is key to operations. The presented model in this study covers social, environmental and economic aspects of sustainability. It has been developed and validated using content analysis of academic literature, industry publications, company reports and sustainability frameworks.

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Saturday, 03:30 PM - 05:00 PM, International 9

Track: Sustainable Operations

Session: Servicizing and Green Business Models

Chair(s): Ioannis Bellos

051-0126 Production Planning and Emissions Compliance under Cap and Trade Regulation

Andrew Manikas, Assistant Professor, University of Louisville, United States
James Kroes, Assistant Professor, Boise State University, United States

We present a Newsvendor based heuristic for production planning and emissions allowance acquisitions for firms operating under cap and trade regulation. The heuristic builds on forward buying literature to determine the current period production levels and the number of emissions allowances to but for the current and future periods.

051-0271 The Performance Impact of Service Business Models and Innovation Strategy

Ivanka Visnjic, Assistant Professor, Esade Business School, Spain
Frank Wiengarten, Assistant Professor, Esade Business School, Spain
Andy Neely, Professor, Cambridge University, United Kingdom

We examine the performance impact of servitization, implemented in isolation or jointly with innovation strategy. Joint deployment results in the long-term sustainable competitive advantage, coupled with a degree of performance sacrifice in the short term. Servitization alone results in short-term profit gains but long-term knowledge loss and market performance decline.

051-1030 The Potential of Servicing as a Green Business Model

Vishal Agrawal, Assistant Professor, Georgetown University, United States
Ioannis Bellos, Assistant Professor, George Mason University, United States

In recent years, manufacturers in various industries have begun to orient their practices towards selling the use of the product as opposed to selling the product itself. We investigate the economic and environmental implications of the manufacturer's design and pricing decisions under different forms of servicing business models.

051-1267 Profitability and Environmental Implications of Servitization

Vinayak Deshpande, Associate Professor, University of North Carolina Chapel Hill, United States
Adem Orsdemir, Student, University of North Carolina Chapel Hill, United States
Ali Parlakturk, Associate Professor, University of North Carolina Chapel Hill, United States

Servitization involves selling the functionality of a product or service, rather than a product itself. We research when servitization leads to a win-win strategy where it increases firm profits and reduces environmental impact. We endogenize product durability and consumer use decisions and allow the servicing firm to segment the market.

241 Saturday, 03:30 PM - 05:00 PM, International 10 *Track: Humanitarian Operations and Crisis Management*
Session: Teaching Humanitarian Logistics
Chair(s): Kate Hughes Graham Heaslip

051-1459 Teaching in Humanitarian Logistics

Kate Hughes, Student, Macquarie University, Australia
Graham Heaslip, Associate Professor, National University of Ireland, Ireland
Nezih Altay, Associate Professor, Depaul University, United States
D. Whybark, Emeritus Professor, University of North Carolina Chapel Hill, United States

This workshop aims to promote new theoretical, empirical and practitioner research on the developments of education and training in humanitarian logistics. Specific aspects such as the use of innovative teaching methods, together with consideration of pedagogical issues and research in the areas of disaster management and/or development studies.

242 Saturday, 03:30 PM - 05:00 PM, International B *Track: Learning and Knowledge Management in OM*
Session: KM in Process and Project Management
Chair(s): Vidyaranya Gargeya

051-0347 Knowledge of Small Brazilian Companies on Operations Management Tools

Tonny Rodrigues, Associate Professor, Faculdade Santo Agostinho, Brazil
Átila Lira, Associate Professor, Faculdade Santo Agostinho, Brazil
Irenilza Nâas, Professor, Universidade Paulista - Unip, Brazil

This study featured small Brazilian companies about the knowledge of operations management tools that help in improving the production process of these organizations. There was the knowledge of managers regarding production management tools and business characteristics correlated with the knowledge of managers about these tools.

051-1283 A Task Based Framework to Improve Knowledge Work Efficiency

Francis Gleeson, Student, University College Dublin, Ireland
Vincent Hargaden, Assistant Professor, University College Dublin, Ireland

This paper synthesizes cognitive engineering and productivity improvement literature to develop a new task based framework for problem solving in high volume complex manufacturing. We represent decision making as a process flow where cognitive capacity represents the process constraint. We propose efficiency principles that extend lean manufacturing to knowledge work

051-0427 IT Projects Performance

Eduardo Vasconcellos, Engineer, Universidade De Sao Paulo, Brazil
Renato Moraes, Associate Professor, Universidade De Sao Paulo, Brazil

This paper shows the implantation of processes for monitoring and controlling of projects at an information technology company in Brazil. Twelve interviews were conducted with project managers, business managers and client managers to evaluate the project management process and success perception of them.

051-1359 Opening the Black Box of Replication - The Role of Enabling Bureaucracy

Pettis Kent, Student, University of Minnesota, United States

Replication, also known as the "McDonald's Approach", entails the creation and operation of a number of similar outlets that deliver a product or perform a service. This strategy has grown in importance, with companies across 75 industries actively replicating (e.g. fast food, hotels, banking, small office/home office, retail, etc.), up from 60 industries in 2001. While replication is growing rapidly, there is also a high failure rate (25%) within the first year of a new unit's operation, underscoring the fact that replication is not as simple as many organizational theorists believe. While there have been several studies focused on replication that have posited factors affecting outcomes (e.g. template accuracy), there is a dearth of research that fully analyzes the process between a firm's desire to replicate and their replication outcomes. In this study, we introduce knowledge management literature as a way to better describe and understand the proposed replication relationships, since replication can be viewed as a process that involves knowledge creation followed by knowledge transfer and finally knowledge retention.

051-0877 ERP Systems and Business Process Agility: A Model

Ravi Seethamraju, Senior Lecturer, The University of Sydney, Australia
Krishna Sundar Diatha, Professor, Indian Institute of Management Bangalore, India
Vidyaranya Gargeya, Professor, University of North Carolina Greensboro, United States

There has been some research conducted on the effect of Enterprise-wide Resource Planning (ERP) Systems on business process agility. However, there are no systematic models presented on the topic. This exploratory work presents a model on based on a study of organizations in Australia, India, and the United States.

243	<div>Saturday, 03:30 PM - 05:00 PM, International C</div> <div><i>Track:</i> Supply Chain Risk Management</div> <div><i>Session:</i> Mitigating Supply and Demand Risk</div> <div><i>Chair(s):</i> Yimin Wang</div>
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051-0069 Structuring Beneficial Weather Insurance Contracts for Small Farmers in Developing Countries

Candace Yano, Professor, University of California Berkeley, United States
 Frank Chen, Professor, City University of Hong Kong, Hong Kong
 Quan Yuan, Student, City University of Hong Kong, Hong Kong

Adoption of weather insurance by small farmers in developing countries is low, partly due to their unfamiliarity with insurance. We have found another reason: current policies offer insufficient risk mitigation to make them attractive. We present a variety of weather insurance policies that are potentially more attractive to poor farmers.

051-0338 Supply Chain Planning for Demand Surges: Reactive Capacity and Safety Stock

Lu Huang, Student, Duke University Durham, United States
 Jeannette Song, Professor, Duke University Durham, United States
 Jordan Tong, Assistant Professor, Madison, United States

We consider two sourcing strategies for sudden surge demand: 1) pre-stocking at a specified supplier, and 2) reserving manufacturing capacity to be deployed when surge occurs. We determine the optimal pre-disaster stocking and capacity reservation levels and show their dependence on the item type and surge demand characteristics.

051-0488 Does a Procurement Service Provider Generate Value for the Buyer through Information about Supply Risks?

Zhibin Yang, Assistant Professor, University of Oregon, United States
 Volodymyr Babich, Associate Professor, Georgetown University, United States

PSP's knowledge of suppliers benefits buyers. However, economic wisdom suggests buyers are better off contracting with suppliers directly, if PSP's knowledge concerns supply costs. In a model with asymmetric supply-risk information, we find buyers may benefit from using PSP. We identify and explain benefits and costs from using PSP.

051-0568 Production Chain Disruptions: Inventory and Interruption Insurance

Lingxiu Dong, Associate Professor, Washington University St Louis, United States
 Yu Tang, Assistant Professor, University of Miami, United States
 Brian Tomlin, Associate Professor, Dartmouth College, United States

We analytically explore the use of BI insurance and inventory to mitigate disruption risk in a multi-stage production chain. We characterize the firm's optimal insurance policy-the deductible and coverage limit-and the optimal inventory level at each stage. We examine the interaction between insurance and inventory investments.

Sessions for Sunday, May 11

Sunday, 08:00 AM - 09:30 AM

245

Sunday, 08:00 AM - 09:30 AM, A602

Track: Purchasing and Supply Management

Session: Trust and conflicts in supplier relationships

Chair(s): Sean Handley

051-0234 A Model of Inter-Organizational Conflict Resolution

Stephanie Eckerd, Assistant Professor, University of Maryland, United States

Sean Handley, Assistant Professor, University of Notre Dame, United States

Inter-organizational exchange presents countless opportunities for conflict to occur. Yet, the literature lacks a comprehensive model of conflict resolution processes in supply chain relationships. In this research, we present such a framework which considers the perspectives of both the transgressor and victim.

051-0405 The Critical Factors in Main Contractor and Supplier/Subcontractor Relationships for Managing IEPC Projects

Raktim Pal, Associate Professor, James Madison University, United States

Ping Wang, Associate Professor, James Madison University, United States

While the construction sector is slow to adopt supply chain management best practices, managing main contractor and supplier/subcontractor relationships in international EPC projects using those principles remains unexplored. We collect data by interviewing professionals, and use logistic regression and neural networks to identify the critical factors that influence project outcomes.

051-0741 Buyer-Supplier Relationship Dissolution: An Investment Model

Yi-Su Chen, Assistant Professor, University of Michigan Dearborn, United States

Sam Shen, Associate Professor, Eastern Michigan University, United States

Rusbult's investment model has been used in various relationship contexts, including employee-employer relationships, romantic relationships, abusive relationships, and consumer-brand relationships. The current study expands Rusbult's investment model to the context of buyer-supplier relationships to understand under which conditions purchasing managers are likely to dissolve business relationships with their suppliers.

051-0900 A Reference for Purchasing and the Development of Trust in the Coffee Supply Chain

Jose Carvalho, Associate Professor, University of Brasilia, Brazil

Ely Paiva, Associate Professor, Fundacao Getulio Vargas, Brazil

Jose Mendonca, Lecturer, Instituto Federal do Sul de Minas, Brazil

A new reference for purchasing, capable of extending the communication precision, creates a favorable environment for trust development between traders. Secondary data and interviews indicate that in Brazil-USA coffee trade, the traditional COB classification system is partially replaced by the more precise system of the Specialty Coffee Association of America.

246

Sunday, 08:00 AM - 09:30 AM, A701

Track: Closed Loop Supply Chains

Session: Service Issues in Close Loop Supply Chains

Chair(s): Aybek Korugan

051-0428 Assessing Servicizing as a Strategy for Sustainable Supply Chains

Aybek Korugan, Assistant Professor, Bogazici University, Turkey

Hande Yaman, Student, Bogazici University, Turkey

Product recovery processes are useful activities for supply chain sustainability. Yet uncertain timing, condition and quantity of returns complicate balancing returns with demands. In servicizing systems, since original equipment manufacturers retain the product ownership by leasing products, uncertainties are eliminated and a higher potential for a closed loop supply chain is generated.

051-0531 Trading Off Incentives and Refurbishment Costs for Online Fashion Retailers with Free and Late Returns

Rita DiFrancesco, Student, Whu - Otto Beisheim School of Management, Germany

Arnd Huchzermeier, Professor, Whu - Otto Beisheim School of Management, Germany

Returns are beneficial and costly. We model the scenario where returns are re-sold multiple times and analyze the impact on CLSC profit of investing in faster delivery and quick customer returns as well as product aging and secondary markets. We validate our model with data from a German fashion e-tailer.

051-0702 An Analysis of Synergy Effects between Closed Loop Supply Chains and Product-Service Systems

Olga Roht, Student, Technische Universitat Munchen, Germany

Tobias Engel, Student, Technische Universitat Munchen, Germany

Thomas Wolfenstetter, Student, Technische Universitat Munchen, Germany

Suparna Goswami, Senior Lecturer, Technische Universitat Munchen, Germany

Helmuth Krcmar, Professor, Technische Universitat Munchen, Germany

Closed Loop Supply Chains (CLSC) present a mechanism for enhancing environmental sustainability and enable more efficient supply chain management. Product-Service Systems (PSS) present a possibility of increasing customer satisfaction, and firm competitiveness. We analyze the synergy effects that firms can achieve by integrating the concepts of PSS with CLSCs.

051-0992 Determinants of Outsourcing in Reverse Logistics

Rajesh Srivastava, Professor, Florida Gulf Coast University, United States

Elias Kirche, Associate Professor, Florida Gulf Coast University, United States

There is little research on the extent to which organizations have integrated reverse logistics into their operations and how the decision to outsource all or parts of this process is accomplished. This research addresses this gap and identifies critical drivers in the decision to outsource reverse logistics operations.

247	<p>Sunday, 08:00 AM - 09:30 AM, A702</p> <p>Session: Coordination Within and Between Organizations</p> <p>Chair(s): Anita Tucker</p>	Track: Empirical Research in Operations Management
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051-0218 Achieving Care Integration from the Patients' Perspective: Results from a Care Management Program

Ashley-Kay Fryer, Student, Harvard University, United States
Sara Singer, Associate Professor, Harvard University, United States

Reforms encourage integrated patient care. Yet, the ability of initiatives to achieve integration has not been evaluated from the patient's perspective. We surveyed 3,000 patients from a large multi-specialty physician group. Analyses compare perceptions of integrated care among patients in an innovative care management program to those receiving regular care.

051-0526 Managing and Improving Business Operations in the UK Public Sector

Kevin Summersgill, Audit Manager, UK National Audit Office, United Kingdom
Alec Steel, Audit Manager, UK National Audit Office, United Kingdom

We have performed a systematic assessment of UK government's capability to manage and improve operations. Our analysis of 25 organisations (c100 business areas) has identified several characteristics critical to building an effective management system, and indicates that most improvement programs are ineffective at improving overall operational delivery to taxpayers.

051-0616 Managing Distributed Product Development Projects: Integration Strategies for Time Zone and Language Barriers

Edward Anderson, Associate Professor, University of Texas Austin, United States
Aravind Chandrasekaran, Assistant Professor, Ohio State University, United States
Geoffrey Parker, Professor, Tulane University, United States

Distributed product development encompasses product and process development activities that span organizational boundaries. This can result in several integration challenges, including language and time-zone barriers. From empirical data, we argue for the efficacy of integration by using specialized product design information systems and employing boundary-spanning "supply-chain integrators."

051-0731 When Does Turnover Matter?

Hise Gibson, Student, Harvard University, United States
Ryan Buell, Professor, Harvard University, United States
Ananth Raman, Professor, Harvard University, United States

Turnover is a critical factor in organizational performance. Knowing when turnover matters the most can provide an organization a competitive advantage. Using U.S. government data for over 1500 construction projects outside the continental U.S., we study the impact of when turnover impacts performance outcomes the most.

248	<p>Sunday, 08:00 AM - 09:30 AM, A703</p> <p>Session: Sustainable Production</p> <p>Chair(s): Francois Giraud-Carrier</p>	Track: Sustainable Operations
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051-0071 Sustainable Manufacturing System Aggregate Production Planning Based on Fuzzy Goal Programming

Zhixiang Chen, Professor, Sun Yat-sen University, China

We develop a new decision model for aggregate production planning based on fuzzy goal programming approach with three types of objectives, i.e., economic, environmental and social objectives. For environment objective, carbon emission control goal is considered, and for social objective, CSR (Corporate Social Responsibility) which includes employee health and welfare are considered. Weighted additive method used to solve the problem considering decision preference in weight of goals is adopted. Numerical example and parameter sensitivity analysis are conducted to show the feasibility and effectiveness of the approach.

051-0267 Decision-Making on Remanufacturing with Carbon Emission and Limited Distribution Information

BiYu Liu, Student, Southeast University, China
Weida Chen, Professor, Southeast University, China

In order to assist dedicated parts remanufacturers and policy makers in making decisions. Production decisions of dedicated parts remanufacturer, which remanufactures in disassembly-to-order (DTO) approach, with limited demand distribution information and three carbon emission policies (carbon limitation, carbon tax and carbon trade) are studied in this paper.

051-0499 Pollution Regulation of Firms Producing Partial Substitutes

Krishnan Anand, Associate Professor, University of Utah, United States
Francois Giraud-Carrier, Assistant Professor, University of Illinois at Springfield, United States

We develop an integrated pollution-production model to study the effects of pollution regulations on firms, consumers and society, when strategic firms hold some market power. We discuss several normative criteria and benchmarks, and evaluate three widely-used pollution control mechanisms: a direct pollution cap, a cap-and-trade system, and an emission tax.

051-0655 Implications of Grouping Strategies in Sustainable Multi-item Inventory Systems

Dincer Konur, Assistant Professor, Missouri University of Science And Technology, United States
Brian Schaefer, Brian Joseph (S&T-Student), Student, Missouri University of Science And Technology, United States

We formulate a sustainable joint replenishment problem considering two common grouping strategies: indirect and direct grouping. Pareto efficient solutions are approximated under each grouping strategy using heuristic methods. We illustrate that, depending on the cost and green goals, a retailer can select different grouping strategies.

051-1425 Green Supply Chain Assessment Model for Aviation and Aerospace Manufacturing Industry

Aman Gupta, Assistant Professor, Embry-Riddle Aeronautical University - Worldwide, United States
Mohammed Arif, Professor, University of Salford, United Kingdom

The importance of green supply chains has emerged in the past two decades. We attempt to create a model for assessment of green supply chains for the aviation and aerospace manufacturing industry. Green drivers, barriers, green supply chain practices and firm performance measures are identified and their interaction is examined.

249	Sunday, 08:00 AM - 09:30 AM, A704 <i>Session:</i> Retail Operations <i>Chair(s):</i> Naren Agrawal Stephen Smith	<i>Track:</i> Retail Operations Management
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051-0299 Optimal Price Trajectories and Inventory Allocations for Inventory Dependent Demands

Stephen Smith, Professor, Santa Clara University, United States
 Naren Agrawal, Professor, Santa Clara University, United States

Retail demand is often inventory dependent because larger inventories create more attractive displays and low inventories can create broken assortments. This research jointly optimizes the shape of the optimal price trajectory and the optimal allocation of inventory across a set of non-identical stores with inventory dependent demand.

051-0421 Adoption of a Markdown Decision Support System at Zara

Felipe Caro, Associate Professor, University of California Los Angeles, United States

Since 2008, Zara has been using a model-based process to support its markdown decisions during clearance sales. We study the adoption of the tool by the country managers and analyze the impact that key user interface modifications have had on pricing decisions.

051-1103 Improving Store Liquidation

Nathan Craig, Student, Harvard University, United States
 Ananth Raman, Professor, Harvard University, United States

Store liquidation is the divestment of retail outlets through an in-store sale of inventory. We introduce the store liquidation problem and present a model for optimizing key decisions. We evaluate the performance of this method during recent liquidations and discuss how current practice differs from the model's decisions.

051-1200 Modeling Consumers? Experience Duration and Return Decision for Return Forecasting and Retail Operations

Mark Ferguson, Professor, University of South Carolina, United States
 Guangzhi Shang, Student, University of South Carolina, United States
 Michael Galbreth, Associate Professor, University of South Carolina, United States

Consumer returns account for 10% of total retailer revenue. We develop an econometric model that explains consumer's experience duration and return probability, which are used for predicting return quantity in a given time period. This approach yields 20% to 50% lower forecast error than a series of other forecasting benchmarks.

250	Sunday, 08:00 AM - 09:30 AM, A705 <i>Session:</i> Six-Sigma and Performance Improvement <i>Chair(s):</i> Jamison Kovach	<i>Track:</i> Healthcare Operations Management
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051-0856 Adaptation and Implementation of Improvement Methods in a Middle Eastern Hospital

Paul Walley, Senior Lecturer, Oxford Brookes University, United Kingdom

This paper studies the adaptation of Lean-Six sigma improvement methods to suit the cultural and organizational context of a hospital in Riyadh, Saudi Arabia. This work was part of an 18-month ethnographic study by the author. The work identifies new contingencies for process improvement methodologies.

051-0855 Use of Management Techniques and Efficiency in Medium Sized Hospitals

Luiz Brito, Professor, Fundacao Getulio Vargas, Brazil
 Ana Maria Malik, Associate Professor, Fundacao Getulio Vargas, Brazil
 Tales Andreassi, Professor, Eaesp - Fgv, Brazil
 Sergio Bulgacov, Professor, Eaesp - Fgv, Brazil
 Eliane Brito, Professor, Eaesp - Fgv, Brazil
 Denise Balchiunas, Student, Eaesp - Fgv, Brazil
 Maria Grazia Justa, Student, Fundacao Getulio Vargas, Brazil
 Rebeca Graf, Student, Eaesp - Fgv, Brazil

This study explores the effect of operations, marketing, strategy, HR and financial management on performance in medium sized hospitals (20 to 200 beds). A survey with over 50 hospitals in São Paulo- Brazil, using SPSS 21 K-means, showed a positive effect of size and use of management techniques on performance.

051-0572 Organizational Learning in Behavioral Healthcare

Jamison Kovach, Associate Professor, University of Houston, United States
 Lawrence Fredendall, Professor, Clemson University, United States
 Adrian Choo, Assistant Professor, Georgia State University, United States

This presentation will describe plans for a follow-up study that investigates the application of Design for Six Sigma in behavioral healthcare in real-time as well as the literature that supports the foundations for this research. This study will specially focus on the organizational learning that results from improvement/design efforts.

251	Sunday, 08:00 AM - 09:30 AM, A706 <i>Session:</i> Information Management in Healthcare <i>Chair(s):</i> Emre Demirezen	<i>Track:</i> Healthcare Operations Management
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051-0637 Bundled Payments: Models and Decisions

Brenda Courtad, Student, University of Cincinnati, United States
Michael Magazine, Professor, University of Cincinnati, United States

The bundled payment models, along with the DRG codes, define the episodes of care to be covered by the payment. We present an examination of these models along with the decisions a provider must make when entering into the bundled payment initiative.

051-0606 Managing Information Dissemination during Handoffs: A Social Network Analysis View

Antonio Silva, Student, Universidade Municipal São Caetano do Sul, Brazil
Aline Avelar, Student, Universidade Municipal São Caetano do Sul, Brazil
Milton Farina, Professor, Universidade Municipal São Caetano do Sul, Brazil

Handoff and transitional care are among the most common and consequential errors in healthcare service. This study aims to identify the most important healthcare service provider which must continuously manage information as a patient moves from place to place within the healthcare system, seen through a Social Network Analysis lens.

051-0770 The Use of Information Technology in Hospitals: An Empirical Investigation

Anand Nair, Professor, Michigan State University, United States
David Dreyfus, Student, Michigan State University, United States

In this paper, we examine the impact of planning and vendor strategy on the use of information technology in health care organizations. The motivation and hypotheses are presented. The results, along with the managerial and research implications, are discussed.

051-0773 A Study on Sustainability of Healthcare Information Exchanges

Emre Demirezen, Assistant Professor, Binghamton University, United States
Subodha Kumar, Professor, Texas A&M University College Station, United States
Arun Sen, Professor, Texas A&M University College Station, United States

We work with different HIE providers and study their businesses in two models. The first model deals with the start-up HIEs that focus on connectivity of different healthcare providers. The second model analyzes established HIE providers that also offer value-added services. We provide several results and insights in both models.

252 Sunday, 08:00 AM - 09:30 AM, A707 *Track:* Product Innovation and Technology Management
Session: Product Development and Generic Drug Shortage in the Pharmaceutical Industry
Chair(s): Zhili Tian

051-1175 Health Economic Evaluation of a Health-based Pharmaceutical Pay-for-performance Risk-sharing Agreement

Reza Mahjoub, Student, Ivey Business School - Western University, Canada
Fredrik Odegaard, Assistant Professor, Ivey Business School - Western University, Canada
Gregory Zaric, Associate Professor, Ivey Business School - Western University, Canada

We analyse a risk-sharing between a payer and a pharmaceutical firm, where patients are prescribed the drug if their probability of response lies within a range of success probabilities. We generalize on the existing literature and find a threshold for rebate rate where payer's payoff and manufacturer's profit become non-monotonic.

051-0624 Mitigating Cancer Drug Shortages

Dali Zhang, Assistant Professor, Shanghai Jiao Tong University, China
Xiaowen Chang, Associate Professor, McGill University, Canada
Shanling Li, Professor, McGill University, Canada
Huifu Xu, Professor, City University - London, United Kingdom

We propose to develop a chance-constrained model to describe cancer drug shortage problem and in the model, we consider demand uncertainty for cancer drugs, uncertain availability of generic drug supplies. To solve the problem, we developed an effective algorithm and generate managerial insights.

051-0730 Innovation through Acquisition: A Multi-Agent Simulation of the Pharmaceutical Supply Chain

Christian Rossetti, Assistant Professor, North Carolina State University, United States
Michael Stanko, Assistant Professor, North Carolina State University, United States

Pharmaceutical firms have increasingly used acquisition to buttress internal product development efforts. Using a multi-agent simulation of the pharmaceutical industry we gauge the effectiveness of acquisition to improve product pipeline and financial performance. We find significant positive effects on short term performance while long term effects are less certain.

051-0139 Dynamic Investment in Phase III New Drug Development

Zhili Tian, Assistant Professor, Florida International University, United States

Firms conduct Phase III drug trials by enrolling and treating hundreds or thousands of patients. Finding these patients is expensive and time consuming, with uncertainty. We consider how firms should determine their investment policy. This must be done recognizing that there is also uncertainty in the outcome of a trial.

253 Sunday, 08:00 AM - 09:30 AM, A708 *Track:* Revenue Management and Pricing
Session: Pricing Product Variants Considering Assortments and Dynamics
Chair(s): Candace Yano

051-0172 Dynamic Pricing with Loss-Seeking Reference Price Effects

Xin Chen, Associate Professor, University of Illinois Urbana-Champaign, United States
Zhenyu Hu, Student, University of Illinois Urbana-Champaign, United States

We study a dynamic pricing problem of a monopolist facing consumers with loss-seeking reference price effects at an aggregate demand level. The problem involves complicated dynamics even under a myopic pricing strategy. For some empirically validated scenarios, we characterize the cyclic behavior of the optimal prices.

051-0106 Dynamic Pricing and Replenishment with Customer Upgrades
Oben Ceryan, Assistant Professor, LeBow College of Business, United States

We study the impact of product upgrades on a firm's pricing and replenishment policies by considering a multiple period, nested two-stage model where the firm first sets prices and replenishment levels, and after observing the demand, it decides whether to upgrade any of the customers to a higher quality product.

051-0127 Assortment Choices and Pricing for Competing Retailers when Consumers are Uninformed of their Tastes
Steve Gilbert, Professor, University of Texas Austin, United States
Haoying Sun, Assistant Professor, Texas A&M University College Station, United States

We examine the price competition that ensues following the assortment choices of competing retailers when consumers do not know their taste for a product until they touch or feel it. We show conditions under which two symmetric retailers choose asymmetric assortment breadths in equilibrium.

051-0122 Impact of Store-Brand Sourcing on the Retailer's Choice of Quality and Price
Candace Yano, Professor, University of California Berkeley, United States
Bo Liao, Student, University of California Berkeley, United States

Store brand (or private label) products may be produced in-house, by a third-party supplier, or by a national-brand manufacturer of competing products. We derive equilibrium results to show how sourcing affects the retailer's choice of product quality and prices of both the national and store brand products.

255	Sunday, 08:00 AM - 09:30 AM, M101	<i>Track:</i> Information Systems
	<i>Session:</i> Services, Supply Chain, and IS	
	<i>Chair(s):</i> Debrabata Dey Atanu Lahiri	

051-0158 Combating Online Piracy: Should Pirated Products be Made Less Available or Less Attractive?
Antino Kim, Student, University of Washington, United States
Atanu Lahiri, Assistant Professor, University of Washington, United States
Debrabata Dey, Professor, University of Washington, United States

In light of the recent movement towards restricting online supply and availability of pirated digital goods, we study the economic implications of such policies and compare them to the traditional ones that penalize consumption of illegal copies.

051-0191 The Role of Disseminative Capacity in HIT Adoption
Debrabata Dey, Professor, University of Washington, United States
Atanu Lahiri, Assistant Professor, University of Washington, United States
Gang Peng, Associate Professor, Youngstown State University, United States

This work synthesizes the theories on social networks and knowledge transfer to study Health IT adoption. Accordingly, a novel research framework is proposed. Using a large panel dataset covering 5,000+ hospitals over a 13-year horizon, we find strong support for our hypotheses derived from this framework.

051-0350 An Empirical Analysis of Spatial Arbitrage, Electronic Commerce, and Market Integration
Hemang Subramanian, Student, Georgia Institute of Technology, United States
Eric Overby, Assistant Professor, Georgia Institute of Technology, United States

Though arbitrage plays a fundamental role in economic theory, very few empirical studies have shown a relation between arbitrage and market efficiency. We use transaction level data in the wholesale automotive markets between 2003 and 2010, and study how electronic trading affects Market integration as indicated by spatial arbitrage.

051-0963 Provider Partnership Models for Technology Investment
Balaraman Rajan, Student, University of Rochester, United States

With the advent of Electronic Health Records and Telemedicine technologies, the key aspect of efficient healthcare delivery is coordinated care. Using economic and game theoretic models, we analyze the optimal level of investments and importantly show why the smaller community hospitals should take the initiative in technological improvements.

256	Sunday, 08:00 AM - 09:30 AM, M102	<i>Track:</i> Inventory Management
	<i>Session:</i> Inventory Model and Practice	
	<i>Chair(s):</i> Zhengliang Xue	

051-0176 On Serial Supply Chains with Markov-Modulated Demand: Derivative Analysis and Solution Bounds
Li Chen, Assistant Professor, Duke University Durham, United States
Jeannette Song, Professor, Duke University Durham, United States
Yue Zhang, Student, Duke University Durham, United States

We derive bounds for the optimal policies for serial inventory systems with markov-modulated demand. Our bounds generalize the existing newsvendor bounds for serial systems with stationary demand. We further prove that the relative error between our bounds and the optimal solutions converges to zero as the lead time increases.

051-0890 A Symptotic Optimality of Cyclic Constant-Order Policies for Lost-Sales Models with Fixed Ordering Costs
Linwei Xin, Student, Georgia Institute of Technology, United States
David Goldberg, Assistant Professor, Georgia Institute of Technology, United States
Yingdong Lu, Research staff member, IBM, United States
Mayank Sharma, Research Staff Member, IBM, United States
Mark Squillante, Research Staff Member, IBM, United States
Peter van de Ven, Research Scientist, IBM, United States
Bo Zhang, Research Scientist, IBM, United States

Recently, it was shown that a simple constant-order policy is asymptotically optimal for certain notoriously challenging lost-sales inventory models, as the lead time grows large. Here we prove that when one also faces fixed ordering costs, a cyclic policy in which a constant order is placed periodically is asymptotically optimal.

- 051-1017** A Differentiated Pricing Strategy for Freshness Inventory
 Zhengliang Xue, Research Staff Member, IBM, United States
 David Yao, Professor, Columbia University, United States
 Markus Ettl, Manager, IBM, United States

Consider a pricing and stocking system where managing inventory freshness is a central concern. Motivated by industry practice, we study a differentiated pricing strategy contingent on product freshness. With a suitable consumer choice model, we analyze the retailer's joint pricing and inventory decisions to maximize expected profit under stochastic demand.

257	Sunday, 08:00 AM - 09:30 AM, M103	<i>Track:</i> Manufacturing Operations
	<i>Session:</i> Manufacturing strategy-1	
	<i>Chair(s):</i> Shellyanne Wilson	

- 051-1174** Measuring Product Heterogeneity in Process Manufacturing
 Shellyanne Wilson, Assistant Professor, The University of Trinidad and Tobago, Trinidad and Tobago

Product variety contributes to the complexity of manufacturing operations. While for assembly-type operations, a variety of mathematical methodologies have been used to analyze product families, fewer studies have focused on product families in process manufacturing. This paper explores product range heterogeneity in process manufacturing via a single case study.

- 051-0311** The Effect of Organization Size on Formulating and Implementing Global Operations Strategy
 Cory Dvornik, Student, Mount Royal University, Canada
 Jason Banert, Student, Mount Royal University, Canada
 Kalinga Jagoda, Associate Professor, Mount Royal University, Canada

Using multiple-case study approach, this paper analyzes the current operations strategies deployed by the oil and gas services firms in Canada. We developed a path-dependent model for formulation and implementation of operation global operations decision and how the company size affects the path progression.

- 051-1447** Technological and Innovation capability Mapping in the Formal Mining Sector in Nigeria
 Oluseye Oladayo, PhD Fellow, African Institute for Science Policy and Innovation, Nigeria, Nigeria
 Mathew Ilori, , ,
 Billy Oluwale, , ,
 M.O. Olorunfemi, , ,

Nigeria is endowed with more than 34 economic minerals which could be exploited. In spite of these vast reserves, the solid minerals sector contributes only about 0.3% to Nigeria's GDP, as against its erstwhile 10% few decades back. Literature attributed the slow development of Nigeria's solid minerals sector to a number of man-made and natural factors. The study seeks to map technology and innovation activities in the formal mining sector thereby developing some sets of Science, Technology and Innovation Indicators for Nigeria for monitoring, benchmarking, evaluating and forecasting STI in mining in Nigeria for the sector's planning and development purposes.

- 051-0529** Contributions of MES (Manufacturing Execution System) to Improve Manufacturing Competitive Priorities
 José Neves, Professor, Centro Paula Souza, Brazil
 Fernando Marins, Professor, Unesp Universidade Estadual Paulista, Brazil
 Getulio Akabane, Professor, Centro Paula Souza, Brazil

Describe MES contributions for manufacturing performance as a cost reduction, quality improvements and flexibility, conformity and reliability issues. From steelworks company case study with production process tracking as fast, standardized, reliable and precise information, MES contributes to improve shop floor performance to get manufacturing competitive advantage.

- 051-0533** Internationalization and its Consequences on the Operations Management in a Appliance Company
 Kleber Milaneze, Assistant Professor, Faculdades Integradas de Bauru, Brazil
 Alessandra Rachid, Associate Professor, Federal University of São Carlos, Brazil

The text analyzes the internationalization of a home appliance company located in Brazil and its consequences on the operations management. The research involved interviews with a director and managers. It permitted to understand which activities won or lost autonomy and which operations management methods were required by the acquiring company.

258	Sunday, 08:00 AM - 09:30 AM, M104	<i>Track:</i> Marketing and OM Interface
	<i>Session:</i> Supply Chain and Marketing	
	<i>Chair(s):</i> John McDonald Hisashi Kurata	

- 051-0312** Building Private Brands in Grocery Retailing
 John McDonald, Student, Mount Royal University, Canada
 Kalinga Jagoda, Associate Professor, Mount Royal University, Canada

Using multiple case study approach, this paper explores the connection between supply chain strategies and success of private labels. The analysis shows that a successful private label business must have a sound supply chain in place to operate efficiently and resolve issues and challenges effectively.

- 051-0169** A Base Product and Optional Part Design when Consumers Prefer a Product with Unnecessary Features
 Hisashi Kurata, Associate Professor, University of Tsukuba, Japan

It is common for consumers of hi-tech products to buy products with features that exceed their actual needs. Applying a vertical differentiation model, we determine the design of a base product, optional parts, and after-sales services when customers prefer over-spec products.

- 051-0513** Study of Consumer Response to Stockout and its Implication to Inventory Management

Madhukar Nagare, Student, Indian Institute of Technology Bombay, India
Pankaj Dutta, Assistant Professor, Indian Institute of Technology Bombay, India

Retail stockout adversely affects the revenue and customer loyalty. Understanding consumer response to stockout especially substitution holds key in mitigating stockout cost. This paper based on exit-survey in Indian retail context identifies important drivers of substitution and presents implications to inventory management, effects of continual stockouts and estimate stockout cost.

259	<p>Sunday, 08:00 AM - 09:30 AM, M106 <i>Track:</i> OM Practice</p> <p><i>Session:</i> Women Supply Chain Executives</p> <p><i>Chair(s):</i> Roberta Russell</p>
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051-0504 Women Leaders in Supply Chain Management
Sharon Rice, Executive Director, APICS Foundation, United States

This session presents an industry panel of women leaders in the field of supply chain management to discuss the challenges and rewards of advancing in a supply chain career. Sharon Rice, Executive Director of the APICS Foundation, will serve as panel moderator.

260	<p>Sunday, 08:00 AM - 09:30 AM, International 2 <i>Track:</i> General Track</p> <p><i>Session:</i> New Applications of Classic Methods</p> <p><i>Chair(s):</i> Victor Pimentel</p>
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051-1182 Analyzing Routing Problems for Foodbank Models: A Genetic Algorithm Solution
Martin Tanco, Professor, Universidad De Montevideo, Uruguay
Nicolas Uviedo, Student, Universidad De Montevideo, Uruguay
Claudio Ruibal, Professor, Universidad De Montevideo, Uruguay

The growth of foodbanks has been broadly welcomed, since they aim to relieve hunger and food waste issues. The purpose of this article is to analyze foodbanks' logistics models around the world while presenting a genetic algorithm solution to the routing problem in those systems.

051-1236 Partial Privatization of Energy Generation and Distribution: A DEA Analysis to guide private investors
Victor Pimentel, Student, Washington State University Pullman, United States
Charles Munson, Professor, Washington State University Pullman, United States

In December 2013, the Mexican Senate passed the Energy Reform Bill, which allows the private sector to invest in each of the 13 geographical sections off the Mexico's public energy company, CFE. We apply data envelopment analysis to compare the relative efficiency between these sections.

051-0515 Efficient Binary Classification of Large Datasets
Philipp Baumann, Student, University of Bern, Switzerland
Dorit S. Hochbaum, Professor, University of California Berkeley, United States

The classification of credit card applications becomes computationally expensive for large datasets. We use the supervised normalized cut model as a classification approach and propose a novel preprocessing algorithm which considerably reduces run times with minimal loss in classification accuracy. The effectiveness of our approach is illustrated for real-world data.

051-1134 Using Bayesian Structural Equation Modeling in Operations Management Research: A Practical Guideline
Ramkumar Maria Arputham, Student, Indian Institute of Technology Kharagpur, India
Mamata Jenamani, Associate Professor, Indian Institute of Technology Kharagpur, India

The bayesian approach to structural equation modeling (BSEM) has been started using in business research fields such as information systems and other behavioral studies. The use of BSEM in operations management (OM) field is almost nil. The main contribution of this paper is tailoring the BSEM usage to OM context.

051-0088 Quantitative and Qualitative Modeling: The Search for Balance in the Data
Solimar Garcia, Student, Universidade Paulista - Unip, Brazil
Eduardo Vicens-Salort, Professor, Universidad Politecnica De Valencia, Spain
Irenilza Nãas, Professor, Universidade Paulista - Unip, Brazil

Studies with statistical modeling assertive quantitative confer degrees in Engineering Production and Operations. In some cases it is almost impossible to obtain data directly from the companies, which prevents the development of research. Find ways to enter data in qualitative modeling can mean advances in business strategies with effective results.

261	<p>Sunday, 08:00 AM - 09:30 AM, International 3 <i>Track:</i> Scheduling and Logistics</p> <p><i>Session:</i> Vehicle Routing and Scheduling Problems</p> <p><i>Chair(s):</i> Bruce Golden</p>
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051-1114 A Joint Surveillance and Patrol Problem for Law Enforcement
Belleh Fontem, Student, University of Alabama Tuscaloosa, United States
Sharif Melouk, Associate Professor, University of Alabama Tuscaloosa, United States
Burcu Keskin, Assistant Professor, University of Alabama Tuscaloosa, United States

We investigate the allocation of law enforcement resources, using information gathered from surveillance systems, to resolve incidents of interest within a time window of opportunity. We develop a mixed integer formulation that maximizes the cumulative harm averted from society. To address large problem instances, we employ a heuristic approach.

051-0521 Mode Allocation and Scheduling of Containers in the Hinterland Transportation
Stefano Fazi, Student, Technische Universiteit Eindhoven, Netherlands
Jan Fransoo, Professor, Eindhoven University of Technology, Netherlands
Tom Van Woensel, Professor, Eindhoven University of Technology, Netherlands

We model a particular container supply chain, where export containers have to be moved to the port and import ones have to be brought to the hinterland. A time-constrained VRP formulation with pick-ups and deliveries is proposed. The problem is solved heuristically. We also provide managerial insights.

051-0181 Min-Max vs. Min-Sum Vehicle Routing: A Worst-Case Analysis

Luca Bertazzi, Associate Professor, University of Brescia, Italy
Bruce Golden, Professor, University of Maryland, United States
Xingyin Wang, Student, University of Maryland, United States

Both minimizing the sum of lengths of all routes and minimizing the length of the longest route are important objectives for Vehicle Routing Problems. We perform a worst-case study to show that the optimal solution with respect to one objective can be very poor in terms of the other one.

051-0009 Concurrent Optimization of Manufacturing Scheduling and Transportation Mode with Capacity Constraints

Can Celikbilek, Student, Ohio University, United States
Gursel Suer, Professor, Ohio University, United States

A mixed integer mathematical model is proposed for simultaneous optimization of manufacturing scheduling and transportation mode selection decisions in a cellular manufacturing environment. Job sequences are determined in each cell and then alternative transportation methods are identified for each smaller lot of every job to maximize the total profit.

262

Sunday, 08:00 AM - 09:30 AM, International 4

Track: Behavior in Operations Management

Session: Sourcing and Inventories (II)

Chair(s): Arunachalam Narayanan

051-0516 Decision Bias in Capacity Allocation Game with Uncertain Demand

Yefen Chen, Student, Tsinghua University, China
Xiaobo Zhao, Professor, Tsinghua University, China

A setting of capacity allocation game with demand uncertainty is theoretically analyzed, based on which an experimental study is conducted. The theoretical results exaggerate retailers' tendency of both telling the truth and inflating the order to the experimental data. We develop a behavioral model to explain the observed bias.

051-0517 How Newsvendor Learns to Order with Censored Demand Information

Yingshuai Zhao, Student, Department of Industrial Engineering, China
Xiaobo Zhao, Professor, Department of Industrial Engineering, China

An experiment is conducted to investigate newsvendor behavior with completely censored demand. Compared with full-information scenario, participants have a different anchoring point and a dynamic adjustment process in censored-information scenario. An exponential learning model is developed, from which it is observed that learning convergence rate depends on profit condition.

051-1257 Incentive Alignment and Information Sharing in Supply Chain

Arunachalam Narayanan, Assistant Professor, University of Houston, United States

Supply chains have multiple partners and the individual echelon's actions are dictated by their incentives and performance metrics. Misaligned incentives are often cause of excessive inventory, stock-outs and poor customer service. Using a laboratory experiment we evaluate the effectiveness of incentive alignment and information sharing in supply chains.

051-1383 Forecast Sharing under Supply Uncertainty

Jud Kenney, Student, McGill University, Canada
Saibal Ray, Professor, McGill University, Canada
Jim Engle-Warnick, Associate Professor, McGill University, Canada

This study investigates the behavior of manufacturers and suppliers sharing forecasts when the uncertainty of the forecast is dominated by supply instead of demand. We elicit beliefs of both manufacturer and supplier roles and compare how subjects inflate their forecast as manufacturers and compensate for the inflation as suppliers.

263

Sunday, 08:00 AM - 09:30 AM, International 5

Track: Supply Chain Contracting

Session: Contemporary Issues in Supply Chain Contracting

Chair(s): Isik Bicer

051-1310 Incentives for Forecast Sharing in a Fluctuating Market

Ting Luo, Student, University of Texas Dallas, United States

We study a contracting problem where the supplier design payment incentives for the retailer to share his demand forecast. The forecast is private and dynamic. We show that the optimal contract is driven by market evolution and entails diminishing information rents distributed over time.

051-0664 Newsvendor Problem with Shelf Space Dependent Demand: Implications for Design of Coordination Mechanisms

Neha Advani, Student, Indian Institute of Management Bangalore, India

We consider a two player supply chain with one manufacturer and a retailer for a product with shelf space dependent demand in a newsvendor setting. We examine the role of wholesale-price and buy-back contracts in coordinating this supply chain. We derive managerial insights based on structural results and computational studies.

051-0482 Quantity Flexibility in a Supply Chain: Opportunities and Threats

Isik Bicer, Student, University of Lausanne, Switzerland
Suzanne de Treville, Professor, Universite De Lausanne, Switzerland
Verena Hagspiel, Associate Professor, Norwegian University of Science and Technology, Norway

We use the "Contracts as reference points" (CARP) theory to model the relationship between quantity flexibility and buyer profit and capture the negative effects of flexibility. We show that this relationship is moderated by lead time. As lead time decreases, the relationship between quantity flexibility and profit becomes more positive.

- 051-0153** Optimizing Shipper Contracting: The Correct Usage of Incoterms for Containerized/Intermodal Freight
Drew Stapleton, Professor, University of Wisconsin, United States

INCOTERMS 2010 clarifies which terms are and are not intended for maritime intermodal shipping. Nonetheless, many continually misuse Incoterms, leaving themselves vulnerable. I elucidate key changes in INCOTERMS 2010, paying attention to the oft-misunderstood, misused FOB. I suggest FCA might close this vulnerability gap, creating greater visibility and control.

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| 264 | Sunday, 08:00 AM - 09:30 AM, International 6 | <i>Track:</i> Closed Loop Supply Chains |
| | <i>Session:</i> Empirical Investigation and Taxonomic Classification of Product Recalls | |
| | <i>Chair(s):</i> George Ball | |

- 051-0837** A Product Recall Taxonomy: Towards a Greater Understanding of the Recall Process and Underlying Resource Gaps
Kaitlin Wowak, Assistant Professor, University of Notre Dame, United States
Christopher Craighead, Associate Professor, Penn State University University Park, United States
Dave Ketchen, Jr., Professor, Auburn University, United States

In this grounded theory investigation, we uncover a recall process that consists of eight interrelated components and develop a recall taxonomy comprised of four types of product recalls. Each type of recall provides insight about: (1) a firm's resource endowments; and (2) how effectively a firm orchestrates their resources.

- 051-1323** The Decision to Recall: A Behavioral Investigation in the Medical Device Industry
George Ball, Student, University of Minnesota, United States
Rachna Shah, Associate Professor, University of Minnesota, United States
Karen Donohue, Associate Professor, University of Minnesota, United States

We present results of a behavioral experiment investigating biases in the product recall decision making process in the medical device industry. Using industry expert subjects, this experiment identifies opportunities for firms to improve the objectivity of the product recall decision.

- 051-1093** The Antecedents to the Rate and Effectiveness of Learning from Automotive Product Recalls
John Ni, Assistant Professor, University of Rhode Island, United States
Xiaowen Huang, Associate Professor, Miami University, United States

This paper investigates how defect- and supply chain-related factors influence the rate and effectiveness of organizational learning. Using data on recalls announced by automakers during 2000-2012, we estimate the effects of these factors on learning measured as a reduction in the number of recalls for a given automaker.

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| 265 | Sunday, 08:00 AM - 09:30 AM, International 7 | <i>Track:</i> Supply Chain Management |
| | <i>Session:</i> The Effect of Supply Chain Leadership Structure | |
| | <i>Chair(s):</i> Ozgun Caliskan Demirag | |

- 051-0584** Impacts of Power Structure on Supply Chains with Uncertain Demand
Jun Ru, Assistant Professor, SUNY at Buffalo, United States
Ruixia Shi, Assistant Professor, University of Richmond, United States
Jun Zhang, , Fudan University, China

A game-theory framework is used to model power in a supply chain. We demonstrate that whether a firm benefits from its power depends on the expected demand but not on the demand uncertainty. Specifically, a firm benefits from its power only for linear but not for constant elasticity expected demand.

- 051-1231** Bargaining for Supply Chain Revenue Allocation
Dror Hermel, Assistant Professor, University of British Columbia, Canada
Mahesh Nagarajan, Associate Professor, University of British Columbia, Canada
Daniel Granot, Professor, University of British Columbia, Canada

We study a supply chain where a pivotal player negotiates with several non-pivotal players. We provide a Nash-bargaining framework to derive allocations - using an endogenous disagreement outcome. The allocation is a Nash-Nash solution of a system of bargaining problems if non-pivotals cannot communicate, and the Shapley value when they can.

- 051-0353** Retail Selling Prices and Consumer Surplus under Alternative Structures of Channel Dominance
Ozgun Caliskan Demirag, Assistant Professor, Penn State University Erie, United States
Weili Xue, , Nanjing University, China
Baozhuang Niu, Assistant Professor, Sun Yat-Sen University, China

We investigate the impacts channel power structures on alternative retail pricing strategies and consumer surplus. We find that the manufacturer-dominated channel leads to lowest retail price and largest expected surplus for an individual customer; however, entire channel profit and total consumer surplus are highest when the retailer holds channel dominance.

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| 266 | Sunday, 08:00 AM - 09:30 AM, International 8 | <i>Track:</i> Supply Chain Management |
| | <i>Session:</i> Quality and Supply Chain Management | |
| | <i>Chair(s):</i> Jose Carvalho | |

- 051-0124** Quality Improvement in a Supply Chain with Horizontal Competition
Yi He, Professor, University of Science & Technology, China
Zhiying Liu, Professor, University of Science & Technology, China

Xiaohang Yue, Associate Professor, University of Wisconsin Milwaukee, United States

This paper focuses on a supply chain system that consists of one supplier and two competing manufacturers. Utilizing differential game theory, we calculate and compare the equilibrium quality decisions and profits of all channel members in three different cooperative mechanisms (e.g., non-cooperative program, cost sharing contract, joint venture).

051-1064 High Quality as a Result of Buyers and Suppliers Joint Efforts: Evidences from the Coffee Business

Jose Carvalho, Associate Professor, The University of Brasilia, Brazil
Ely Paiva, Associate Professor, Fundacao Getulio Vargas, Brazil

High quality products that reach prices or expert reviews above average results from buyer-supplier engagement in quality management. Interviews with premium coffee shops indicate also that is fundamental, the ability to find new suppliers that are able to offer new desirable attributes.

051-1137 A Study on the Effects of Suppliers' Organization Capability and Collaboration Process on Supply Chain Quality

Youngjin Kim, Student, Seoul National University, Korea, Republic of (South Korea)
Younggil Kim, Student, Seoul National University, Korea, Republic of (South Korea)
Soo Wook Kim, Professor, Seoul National University, Korea, Republic of (South Korea)

The purpose of this study is to verify the effects of suppliers' organization capability and collaboration process on supply chain performance in the context of supply chain quality management. This study developed structural equation model using the data from Supply Chain Collaboration Index investigated by Korean Standards Association.

267

Sunday, 08:00 AM - 09:30 AM, International 9

Track: Sustainable Operations

Session: Ecolabels and Product Design

Chair(s): Ni Fang

051-0027 Role of Ecolabels in Consumer Markets

Eylem Koca, Assistant Professor, Fairleigh Dickinson University, United States
Gilvan Souza, Associate Professor, Indiana University, United States

The proliferation of legitimate and false ecolabels has been reported to cause confusion as to the effectiveness of ecolabels in signaling and bolstering sustainability. Using an analytical model built on recent empirical findings, we investigate why and how firms adopt ecolabels, and how consumers react to ecolabels and information provided.

051-0121 Third-Party Remanufacturing with Components Upgrade and OEM's Modularity Decision

Ni Fang, Student, Hec Paris, France

Modularity may not be a preferred strategy when OEM competes with an independent remanufacturer (IR), particularly when IR has the opportunity to upgrade key components while doing remanufacturing. This paper demonstrates technology obsolescence, OEM competition and remanufacturing with components upgrade can encourage OEM to adopt modularity, creating a win-win situation.

051-0768 An Analysis of Recycled Content Claims under Supply Uncertainty and Demand Benefit

Aditya Vedantam, Student, Purdue University, United States
Ananth Iyer, Professor, Purdue University, United States
Paul Lacourbe, Associate Professor, Ceu Business School, Hungary

Manufacturers making recycled content claims see demand from environmentally conscious consumers. However, the supply of recycled inputs from municipalities, especially curbside recycling, is subject to contamination, leading to uncertain and limited availability. We study how the manufacturers recycled content decision is impacted by supply uncertainty and demand side benefit.

268

Sunday, 08:00 AM - 09:30 AM, International 10

Track: Humanitarian Operations and Crisis Management

Session: Explaining Failure to Avoid Disruption/Disaster in Operations

Chair(s): Willard Price

051-1412 Workshop: Explaining Failure to Avoid Disruption/Disaster in Operations

Willard Price, Professor, University of Pacific, United States

This session will present a life cycle model of disruption/disaster. It will explain the PREVENTION-RESPONSE tradeoff and a method to optimize investment. Suggest reasons why Prevention fails to deter disruption; test in selected cases below. Theorize full prevention is rational. Detail a design for preparing case studies on disaster: "Ten Queries". Offer highlights on more recent cases of system failures with disastrous consequences. Panel members will present insights from these cases: Hurricane Katrina, Fukushima-Daiichi Nuclear Reactors, BP-Deepwater Horizon Spill, West Texas Plant Explosion and Canadian Train Derailment. Propose case studies from the above and other examples for an annual Casebook.

269

Sunday, 08:00 AM - 09:30 AM, International B

Track: Learning and Knowledge Management in OM

Session: Knowledge Management and Learning - I

Chair(s): Cinzia Battistella Sergio Adelar Brun

051-0514 Problem Based Learning in Teaching Operations Management

Ana Maria Turriani, Lecturer, Universidade Federal de Itajubá, Brazil
João Turriani, Associate Professor, Universidade Federal de Itajubá, Brazil
Michele Diaz, Student, Universidade Federal de Itajubá, Brazil

In this paper we relate an experience realized in a Brazilian University. The objective is discussing one active method for learning. Four real life projects were prepared with the collaboration of one global company. The results are the engagement of the students and teaching with hands on projects.

051-0473 Technologies for Teaching and Learning in Production Management: The Use of a Simulator Game

Sergio Adelar Brun, Student, UTFPR, Brazil
Rolf Erdmann, Professor, Universidade Federal De Santa Catarina, Brazil
Mayara Teodoro de Oliveira, Student, Universidade Federal De Santa Catarina, Brazil

Antonio Vaz lopes, Student, UFGD/UNINOVE, Brazil
Edson Hermenegildo Pereira Junior, Assistant Professor, UTFPR, Brazil

There is a constant search to improve the teaching of Production Management. We need to ensure student participation in learning and for that, it presents the adoption of business games end simulations that innovate teaching. The research methodology is the experimental type, applying the game scenarios and realistic results.

051-0541 Small Investors: Challenges and Benefits of IPO - A Case Study in a Small Business in the Region of the CAPÃO

Loide Cacheche, Student, UNASP, Brazil
Joao Santos, Student, Universidade Adventista De Sao Paulo, Brazil
Eduardo Santos, Student, Universidade Nove De Julho, Brazil
Getulio Akabane, Professor, Centro Paula Souza, Brazil

This paper purpose to analyze the importance of knowledge of managers about the market capitals. A case study was conducted in a small business in Sao Paulo. The results shows that the small business is not well structured financially to accept the challenge of the market capitals.

051-0732 The Knowledge Acquisition for Innovation beyond the IT Strategic Outsourcing Contract

Celso Malachias, Student, Fundacao Getulio Vargas, Brazil
Luiz Di Serio, Professor, Fundacao Getulio Vargas, Brazil
Jaime Oliveira, Student, Fundacao Getulio Vargas, Brazil

The aim of this case-study based research is to study companies envisioning external tacit knowledge, product of parties interaction in an IT strategic outsourcing, as a source of innovation generation, beyond the explicit knowledge inherent to the contract, through constructs such as knowledge exchange, spillover, externality and absorptive capacity.

270

Sunday, 08:00 AM - 09:30 AM, International C
Session: Mitigating Supply Disruption
Chair(s): Arnd Huchzermeier

Track: Supply Chain Risk Management

051-0033 The Importance of Long-term Planning with Backup Supply under Supply Disruptions

Jing Hou, Lecturer, Hohai University, China
Amy Zeng, Associate Professor, Worcester Polytechnic Institute, United States
Li Sun, Lecturer, Hohai University, China
Amy Zeng, Professor, Worcester Polytechnic Institute, United States

We consider a buyer's expected costs and optimal base-stock levels when its major supplier encounters supply disruption and different types of backup suppliers are available for selection. By examining the impact of the planning horizon on the buyer's decisions and cost, the importance of long-term planning is identified.

051-0073 Mitigating Supplier Distress: Purchase Order Finance, Advance Payment Discount, and Backup Production

Lima Zhao, Student, W H U, Germany
Arnd Huchzermeier, Professor, W H U, Germany

This paper examines a capital constrained supply chain consisting of one retailer and two suppliers. The retailer has three strategies to manage supplier financial distress and mismatch risk: Purchase order finance(POF), advance payment discount(APD), and backup production. Pre-shipment finance (POF/APD) and backup supply are partial substitutes for the retailer.

051-0762 A Sourcing Decision Model under Risk of Disruption Based on Quality and Delivery Reliability

Masoud kamalahmadi, Student, North Carolina A&T State University, United States
Mahour Mellat-Parast, Assistant Professor, North Carolina A&T State University, United States

We consider the risk of supply disruptions to determine the optimal allocation of demand across suppliers. We develop a decision making model that determines the optimal sourcing strategy. A numerical example as well as a sensitivity analysis is presented to illustrate the model and to provide more insights.

274	<p>Sunday, 01:00 PM - 02:30 PM, A702 <i>Track: Purchasing and Supply Management</i></p> <p>Session: Supply chain security practices and glitches</p> <p>Chair(s): Xenophon Koufteros</p>
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- 051-0457** Keeping Products Safe and Secure: Bad Product Traceability in Supply Chains
 Kaitlin Wowak, Assistant Professor, University of Notre Dame, United States
 Christopher Craighead, Associate Professor, Penn State University University Park, United States
 Dave Ketchen, Jr., Professor, Auburn University, United States

In this grounded theory investigation, we discover various product characteristics and supply chain flow characteristics that impact a firm's traceability capabilities and, thus, pose a threat to product safety and security. We find that a firm's ability to trace products is contingent on supply chain contextual factors.

- 051-0576** Supplier Management and Supply Chain Security: Effects on Performance
 Guanyi Lu, Assistant Professor, Oregon State University, United States
 Xenophon Koufteros, Associate Professor, Texas A&M University College Station, United States
 Aleda Roth, Professor, Clemson University, United States

We study supplier management in the context of supply chain security. We specifically categorize supplier management practices and relate them to operational and firm level performance. We then set boundary conditions. Data collected from 462 western firms are used to examine the posited hypotheses.

- 051-0780** Counterfeiting in Food Sector
 Aleda Roth, Professor, Clemson University, United States

This paper examines the issue of counterfeit food entering the food supply chain. Counterfeit food is below the radar screen of operations. We identify the sourcing, quality risks and supply disruption issues and set an research agenda.

275	<p>Sunday, 01:00 PM - 02:30 PM, A703 <i>Track: Product Innovation and Technology Management</i></p> <p>Session: New Perspectives in NPD</p> <p>Chair(s): Debasish Mallick</p>
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- 051-0648** An Integrated New Product Development Model with Cannibalization between Existing and New Products
 Jebum Pyun, Lecturer, Sookmyung Women'S University, Korea, Republic of (South Korea)
 DaeSoo Kim, Professor, Korea University, Korea, Republic of (South Korea)
 Myung-sub Park, Professor, Korea University, Korea, Republic of (South Korea)

This research examines new product development with cannibalization between existing and new product. We develop an integrated profit maximization model determining new product price, performance level, development time and resources input, and existing product exit time during the development and sales period. Optimal solution and sensitivity analyses provide key insights.

- 051-1062** Impact of NPD Practices and Tools on Internal and External Collaboration and Performance
 Debasish Mallick, Associate Professor, University of St. Thomas, United States

We examine (1) how NPD Practices and Tools affect the relationship between internal and external collaboration and performance and (2) how NPD project characteristics affects the effectiveness of these NPD Practices and Tools empirically, using a large multi-industry, multi-country dataset.

- 051-1418** System Dynamic Model for Patent Strategy Development for a Firm
 Mukundan R, Assistant Professor, National Institute of Industrial Engineering, India
 Karuna Jain, Professor, National Institute of Industrial Engineering, India

Patent strategies have enabled firms to maximize their value generated under dynamic business and technology environment. In this work, we develop a system dynamics model for patent strategy development for a firm focusing on product innovations.

276	<p>Sunday, 01:00 PM - 02:30 PM, A704 <i>Track: Retail Operations Management</i></p> <p>Session: Retail Operations</p> <p>Chair(s): Olga Perdikaki</p>
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- 051-0380** An Integrated Approach for Retail Budget Allocations across Store Labor and Marketing Activities
 Olga Perdikaki, Assistant Professor, Texas A&M University College Station, United States
 Subodha Kumar, Professor, Texas A&M University College Station, United States
 Chelliah Sriskandarajah, Professor, Texas A&M University College Station, United States

We establish the relationship between weekly sales of a retail store with respect to weekly store traffic, weekly store labor hours, and average intra-day traffic variability within a week. We develop an optimization model to allocate store budget across store labor and marketing activities in order to maximize store sales.

- 051-0003** Savvy Consumers, Smart Return Policies: Mitigating Strategic Waiting in Online Retailing
 Mehmet Altug, Assistant Professor, George Washington University, United States
 Tolga Aydinliyim, Assistant Professor, Baruch College, United States

In an online retailing context, we study return management decisions when consumers are discount seeking and sensitive to stock-outs. We find that allowing returns enhances profit if the retailer can salvage with a mild discount, and the ability to do so is a strategic advantage in case of competing retailers.

- 051-0644** Instant Gratification or Delayed Satisfaction: Future Rewards Points versus Immediate Price Discounts
 Monire Jalili, Student, University of Oregon, United States
 Michael Pangburn, Associate Professor, University of Oregon, United States

Retailers commonly offer an immediate discount percentage off regular price. In contrast, some retailers apply a credit toward a future purchase, based on the customer's prior purchase. We contrast the efficacy of these two discounting tactics to better understand conditions under which prior-purchase based discounts may outperform immediate discounts.

051-1081 Buyers and their Impact on Retail Execution

Nicole DeHoratius, Professor, University of Chicago, United States

We explore the role of buyers at 5 different retail chains. The influence of buyers on operational tasks differs at each chain. We pose a number of questions researchers can address regarding the interface between operations and marketing within these buying roles.

277

Sunday, 01:00 PM - 02:30 PM, A705

Track: Healthcare Operations Management

Session: Healthcare Transformation

Chair(s): Jonathan Turner

051-0622 A Capacity Reservation Scheme for Outpatient Scheduling in Destination Hospitals

Jivan Deglise-Hawkinson, Student, University of Michigan Ann Arbor, United States

Jonathan Helm, Assistant Professor, Indiana University, United States

Todd Huschka, Masters Health Services Analyst, Mayo Clinic, United States

David Kaufman, Lecturer, University of Michigan Ann Arbor, United States

Thomas Rohleder, Professor, Mayo Clinic, United States

Mark Van Oyen, Professor, University of Michigan Ann Arbor, United States

Our capacity planning model seeks to meet expected visit access time targets by patient type and plan for a patient mix. Our approach uses integer programs to optimize a booking plan that is also sensitive to utilization and incorporates stochastic models of future visits.

051-1243 Workflow Analysis and Improvement at the Emory Dermatology Clinic

Sara Chapman, Student, Georgia Institute of Technology, United States

Justin Huff, Student, Georgia Institute of Technology, United States

Felix Lagarde, Student, Georgia Institute of Technology, United States

Srinivas Poluru, Student, Georgia Institute of Technology, United States

Lori Houghtalen, Lecturer, Georgia Institute of Technology, United States

Pinar Keskinocak, Professor, Georgia Institute of Technology, United States

Suephy Chen, Associate Professor, Emory University, United States

We analyze workflow in the clinic using historical patient arrival data and direct observations conducted at the clinic, focusing on patient waiting time, patient time in room, patient time with doctor, and total clinic duration. Simulation is used to study proposed improvements and make recommendations for improved clinic operations.

051-0987 Modeling Levels of Care in Outpatient Clinics

Linda LaGanga, Director of Quality Systems & Operational Excellence, Mental Health Center of Denver, United States

We treat patients in outpatient clinics at varying levels of service intensity. We use simulation and forecasting to model the treatment system in two distinct phases to admit new patients using short-interval scheduling for same-day and next-day appointments and link longer-duration forecasts to the admission process to increase patient throughput.

051-0620 The Human Side of Scheduling

Jonathan Turner, Director of Systems Engineering, University Health Care Systems, United States

Three cardiology practices merged and transitioned to an "employed" model, yet were continuing to function as three independent groups. This session tells the story of a series of scheduling changes that were made that enabled them to realize the efficiencies of a larger practice.

278

Sunday, 01:00 PM - 02:30 PM, A706

Track: Healthcare Operations Management

Session: Patient-Centered Models

Chair(s): Douglas Morrice

051-1072 Promoting Patient Centered Outcomes through Leveraging Personal Health Records

Joey George, Professor, Iowa State University, United States

Emily Kohnke, Assistant Professor, Iowa State University, United States

Two emerging areas in health care services are personal health record (PHR) systems and care quality. Patient-centeredness is recognized as a key component of health care quality but lacks theory development and construct measurement. This research develops measurement items for patient-centered outcomes and strategies for using PHRs to promote them.

051-0569 Spillovers and Complementarities for Surgical Procedures

Rodolfo Catena, Student, Said Business School, United Kingdom

The effect of expertise in related diagnostic areas has been recently investigated in the operations management literature. We expand this research to include the impact of co-specialization in related surgical procedures. We first examine the direct effects of co-specialization on hospital outcomes (spillovers); then we consider its moderating effects (complementarities).

051-0921 A Patient-Centered Surgical Home to Improve Outpatient Surgical Processes of Care and Outcomes

Douglas Morrice, Professor, University of Texas Austin, United States

Dongyang (Ester) Wang, Student, The University of Texas at Austin, United States

Jonathan Bard, Professor, University of Texas Austin, United States

Luci Leykum, Professor, The University of Texas at San Antonio Health Sciences Center, United States

Susan Noorily, Professor, The University of Texas at San Antonio Health Sciences Center, United States

Poornachand Veerapaneni, Medical Researcher, The University of Texas at San Antonio Health Sciences Center, United States

Pre-operative screening for outpatient surgery is often prolonged by missing information which can lead to surgery delays. We develop a Patient-Centered Surgical Home (PCSH) model for outpatient surgery with an Anesthesia Pre-operative Clinic serving as information integrator and system coordinator. Using simulation, we demonstrate that the PCSH model performs well.

279	Sunday, 01:00 PM - 02:30 PM, A707	<i>Track:</i> Product Innovation and Technology Management
	<i>Session:</i> Perspectives on the Value of NPD Success	
	<i>Chair(s):</i> Raul Chao	

051-1436 That which yields is not always weak - Valuing Market Diversification and Operational Flexibility Routines

Jane Davies, Assistant Professor, University of Cambridge, United Kingdom
Nitin Joglekar, Associate Professor, Boston University, United States

We categorize routines across two levels of organization based on a paradox of administration: market diversification routines (MDRs) and operational flexibility routines (OFRs). Using a dataset on 174 firms, we explore how capital markets value these routines? Our results show that, consistent with prior results, variation in the MDRs is negatively associated with valuation when routines are implemented in a standalone manner. This well-known result is reversed in the presence of OFRs. At diversified firms, the market values contingency routines and discounts flexible product mix. However, for undiversified firms, flexibility in terms of product mix and modular design are valued.

051-1282 Technology Orientation and Firm Performance in Service Industries

Sidhartha Das, Associate Professor, George Mason University, United States
Maheshkumar Joshi, Associate Professor, George Mason University, United States

We study the effect of technology orientation (one of three types of a firm's strategic orientation) on firm performance in the context of service firms. Our empirical results show that while technology orientation is positively related to firm performance, this relationship is moderated by several organizational factors.

051-0436 Product Innovation and Platform Strategy: Technological Evolution in the Smartphone Industry

Rahul Basole, Associate Professor, Georgia Institute of Technology, United States
Hyunwoo Park, Student, Georgia Institute of Technology, United States

We study the impact of product family management and platform strategy on product innovativeness in the smartphone industry. Our research is grounded in theories of technology evolution and innovation search. Our findings show that product families, platform diversity, and strength of platform coupling are positively associated with product innovativeness.

051-1196 Success Is in the Eye of the Beholder: How Organizational Structures Influence the Definition of Success

Jeremy Kovach, Student, Georgia Institute of Technology, United States
Stylianios Kavadias, Professor, University of Cambridge, United Kingdom

We analyze how the upfront definition of what constitutes a successful outcome determines the implementation of a strategic initiative, and how this definition depends on the structure of the focal organization.

280	Sunday, 01:00 PM - 02:30 PM, A708	<i>Track:</i> Production Planning and Scheduling
	<i>Session:</i> Production Innovation and Scheduling	
	<i>Chair(s):</i> Subhashish Samaddar	

051-1344 To Pull or Not to Pull: A Concept Lost in Translation?

Daryl Powell, Assistant Professor, NTNU, Norway
Emrah Arica, Student, Norwegian University of Science And Technology, Norway

Though the term pull has become a cornerstone of modern manufacturing operations, there seems to be mixed views of the meaning of the concept across different contexts. We conduct a literature review in order to provide an overview of different understandings, and we offer a more context-dependent definition of pull.

051-0574 Reordering Stock Products in Hybrid Production Systems

Bart Beemsterboer, Student, University of Groningen, Netherlands
Martin Land, Associate Professor, University of Groningen, Netherlands
Ruud Teunter, Professor, University of Groningen, Netherlands
Nicky van Foreest, Associate Professor, University of Groningen, Netherlands

We consider a hybrid make-to-order/make-to-stock production system which produces the MTS products in batches. We examine the effect of the number of MTO orders on the inventory level at which a new MTS batch is produced, and the batch size itself, using a Markov Decision Process.

051-0501 Project Scheduling with Work-Content-Constraints

Philipp Baumann, Student, University of Bern, Switzerland
Norbert Trautmann, Professor, University of Bern, Switzerland

The staffing of the activities of a project can often be varied over time subject to some organizational constraints. We present an MILP formulation for allocating the scarce resources to the project activities over time such that the project duration is minimized and various work-content related constraints are met.

051-0812 Smart Factories - Self-organizing Production Units

Elmar Hartweg, Professor, University of Applied Sciences, Lemgo, Germany

Within the framework of the German Government's High-Tech strategy, the initiative Industry 4.0 was created, aiming to develop the "Smart Factory". The approach assumes increased automation and a transparent, user-centred Production Planning and Scheduling. The "intelligent components" communicate with people and systems independently and find the optimal route through production.

282	Sunday, 01:00 PM - 02:30 PM, M101	<i>Track:</i> Information Systems
	<i>Session:</i> Business of Entertainment	
	<i>Chair(s):</i> Hemant Bhargava	

051-0137 Optimal Timing of Sequential Distribution: The Impact of Congestion Externalities and Day-and-Date Strategies

Terrence August, Assistant Professor, University of California San Diego, United States
Hyoduk Shin, Assistant Professor, University of California San Diego, United States

We present a model of consumer choice that examines trade-offs between substitutable products (theatrical and video forms), the possibility of purchasing both alternatives, and a congestion externality affecting consumption at theaters. We characterize the market conditions under which a studio should pursue direct-to-video, day-and-date, and delayed video release strategies.

051-0184 Challenges to Bundling in Distribution of Entertainment Goods
Hemant Bhargava, Professor, University of California Davis, United States

Product bundling is fundamental to the distribution of digital TV and movie content. But the positive forces that normally support bundling are severely weakened here because bundling is done by distributors who must aggregate content across multiple producers. This leads to failures such as carriage fee disputes and channel blackouts.

051-0512 Economics of Content Distribution for Binge Viewing
Hemant Bhargava, Professor, University of California Davis, United States
Marius Niculescu, Assistant Professor, Georgia Institute of Technology, United States

In this study we explore whether a provider should release fresh video entertainment content in bulk for binge viewing or under a staggered approach.

051-0623 Are the Release Windows for Traditional and Digital Film Distribution Channels Collapsing?
Nelson Granados, Associate Professor, Pepperdine University, United States

We examine whether the traditional cinema and DVD release windows are being encroached upon by digital streaming, rental, and download channels.

283 Sunday, 01:00 PM - 02:30 PM, M102 *Track: Inventory Management*
Session: Sustainable Inventory Modeling
Chair(s): Johan Marklund

051-0383 Service Pricing and Technology Choice under Capacity Reservation Contracts
Fredrik Eng-Larsson, Student, Lund University, Sweden
Peter Berling, Associate Professor, Lund University, Sweden

Among firms buying transport services, capacity reservations have become increasingly common as a tool to create incentives for green investments. To evaluate its efficiency, we analyze a service provider's optimal pricing and technology choice under such contracts when the buyer uses a periodic review inventory policy with stochastic demand.

051-0547 Environmental Performance of Decentralized and Centralized Inventory Systems
Yann Bouchery, Eindhoven University of Technology, Netherlands

This paper analyzes the environmental performance of decentralized and centralized inventory systems. Among others, we show that the total supply chain carbon emissions can be greater for centralized systems and we show how this effect could be mitigated.

051-1146 Sustainable Multi-echelon Inventory Control with Shipment Consolidation and Volume Dependent Freight Costs
Sven Axäter, Professor, Lund University, Sweden
Johan Marklund, Professor, Lund University, Sweden
Olof Stenius, Student, Lund University, Sweden

We consider a continuous review one-warehouse-N-retailer system with time based shipment consolidation. Probability distributions for the amount of goods per shipment are derived, enabling inclusion of realistic volume dependent freight costs in the model. The analysis encompasses joint optimization of transportation and inventory decisions, and their impact on CO2 emissions.

051-1397 A Two-Echelon Inventory Model with Customer based Backorder Costs
Fredrik Olsson, Assistant Professor, Lund University, Sweden

In this paper we consider a two-echelon inventory system with n retailers and one central warehouse. All locations apply base-stock policies for replenishments. We study two cases dealing with non-linear backorder costs. In the first case customers are willing to wait for an outstanding unit a pre-specified waiting time. If a customer receives the requested unit within this acceptable waiting time, no penalty cost incurs. If a customer, on the other hand, has to wait longer than this given time limit, a considerable fixed backorder is incurred. In the second case, there is an option for using emergency transshipments.

285 Sunday, 01:00 PM - 02:30 PM, M104 *Track: Marketing and OM Interface*
Session: Pricing Decisions and Understanding the Customer
Chair(s): Paolo Roma

051-0833 Price Dispersion and Competition in Business Routes: An Empirical Analysis
Paolo Roma, Assistant Professor, Università Degli Studi Di Palermo, Italy
Fabio Zambuto, Student, Università Degli Studi Di Palermo, Italy
Giovanni Perrone, Professor, Università Degli Studi Di Palermo, Italy

Airline markets are characterized by the existence of substantial price dispersion. In this paper we investigate the relationship between daily price dispersion and competition using data related to products offered to business travelers in the Italian airline market. We find that the effect of competition on price dispersion is non-monotonic.

051-0363 Determinants of Online Customers' Satisfaction and Dissatisfaction: A Study of Online Customer Reviews
Xun Xu, Student, Washington State University Pullman, United States
Yibai Li, Assistant Professor, The University of Scranton, United States

We analyze the determinants of online customers' reviews through the latent semantic analysis (LSA) method. We find that the products and communication are the determinants for both satisfaction and dissatisfaction. Operational factors are more influential on satisfaction while post-service affects dissatisfaction more. Dissatisfied customers are more emotional than satisfied customers.

051-1001 A Framework for the Alignment of Sales and Operations

Elias Kirche, Associate Professor, Florida Gulf Coast University, United States
Rajesh Srivastava, Professor, Florida Gulf Coast University, United States

This research proposes a framework in process analysis and design for the alignment of sales and operations functions using information technology to bridge their performance gap on critical factors. The objective is to reduce time in the identification of a solution, reduce costs and improve customer service levels.

051-0796 Free Samples, Advertisements, and Customer Targeting Strategies

Lingli Wu, Student, Huazhong University of Science & Technology, China
Shiming Deng, , ,

To reduce customers' valuation uncertainty, retailers usually offer customers free samples for evaluation. Whether free samples worth their cost? How to coordinate sampling strategy with pricing and advertising strategies? Should free samples be sent to specific target groups of customers or all customers? A stylized model is given to address these issues.

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Sunday, 01:00 PM - 02:30 PM, M106

Track: OM Practice

Session: Practice-Based Operational Management, Excellence, and Service

Chair(s): Tonny Rodrigues

051-0231 Evaluation of Operational Excellence Implementation

Roberto Jorge Junior, Project Manager, Accenture, Brazil
Roque Rabechini Jr., Assistant Professor, Universidade Nove De Julho, Brazil

This study examined the factors that influence the results and longevity of operational excellence projects. The evaluation took place through a set of four factors: technicians; strategic; management structure and motivation of teams. It was characterized as proposition a model of effectiveness of operational excellence implementation projects.

051-0349 The Operations Management Practice of Companies in the City of Teresina, Piauí, Brazil

Tonny Rodrigues, Associate Professor, Faculdade Santo Agostinho, Brazil
Átila Lira, Associate Professor, Faculdade Santo Agostinho, Brazil
Irenilza Nääs, Professor, Universidade Paulista - Unip, Brazil

The companies of the city of Teresina, Piauí, Brazil practice operations management? What tools of operations management they use? What are the tools of operations management that they need more? Trying to understand these issues, we developed a survey of 415 companies.

051-1063 The Logic of Consumer in Quality Management of PSS Oriented to the Use

Cristiane Anacleto, Student, Universidade Federal De Santa Catarina, Brazil
Edson Paladini, Associate Professor, Universidade Federal De Santa Catarina, Brazil

A case study was conducted to determine the essentials for assessing the quality of a PSS-type oriented to the use . The items were ranked according to their importance in the functional areas of business. Consumers pointed out the degree of importance of the chosen items.

051-1061 Strategic Quality Management to Product-Service System

Cristiane Anacleto, Student, Universidade Federal De Santa Catarina, Brazil
Edson Paladini, Associate Professor, Universidade Federal De Santa Catarina, Brazil

The aim of this paper is to structure a model for evaluating the quality of product-service system (PSS) to align the organization forward strategically to its consumer market, because little information consumers PSS are available in the literature. A set of items was selected through a literature review.

051-1008 Organization Management in Nonprofit Organizations

Anderson Presoto, Student, University of Sao Paulo, Brazil
Isabela Fontana, Student, University of Sao Paulo, Brazil
Roberta Souza, Assistant Professor, Universidade De Sao Paulo, Brazil

This paper analyses how traditional methods of operations management may be applied on Nonprofit Organizations management. Issue from 25 multiple studies cases, first findings point out that application of some concepts such as efficiency and effectiveness deserves some considerations, it totally possible though. Furthermore, an inverse servitization phenomenon is noticed.

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Sunday, 01:00 PM - 02:30 PM, International 2

Track: General Track

Session: Agro-Operations and Challenges

Chair(s): Harsh Bhasin

051-0523 Ergonomics Aspects in a Product and Operations Design for Manual Harvesting Citrus

Joao Camarotto, Professor, Universidade Federal de São Carlos - Brazil, Brazil
Simone Alves, Student, Universidade Federal de São Carlos - Brazil, Brazil

Improved design tools and work design for manual harvesting citrus aiming to reduce the physical burden of the worker. This research was carried out in work situations in Brazil showed a high incidence of risk of accidents related to the use of ladder and bag in this work activity.

051-0988 Operations Analysis of Food Production for School Units

Fabiano Coimbra, Student, Universidade Federal De São Carlos, Brazil
Joao Camarotto, Professor, Universidade Federal De São Carlos, Brazil

Analysis of operations in the prepared food in a school unit in Brazil, using as reference ergonomic work analysis in order to show the conditions of work process.

051-1149 Logistics Supply Aiding the Production of Materials from Waste Coconut

Juliano Gerber, Assistant Professor, Universidade Estadual de Santa Cruz, Brazil
Lucinara Coelho, Student, Universidade Estadual de Santa Cruz, Brazil
Francisco Freires, Associate Professor, Universidade Federal da Bahia, Brazil

This study aims to develop and apply a method for the logistics supply of an ecological production of vessels dibble tubes. The main reason for this research is the fact that coconut shell waste is a potential replacement for synthetic fibers usage.

051-0038 An Integrated Delphi-Agent-Based-Model (ABM) for Simulating Postharvest Loss Behavior Management

Rakesh raut, Assistant Professor, IMT , India

Harsh Bhasin, Professor, National Institute of Industrial Engineering(NITIE), Vihar Lake, Mumbai-87, India

This paper proposes a decision support system which aims at greatly improving decision making for postharvest management. The decision support system consists of two main components: an integrated Delphi-agent-based model for simulating postharvest loss behaviour; an evaluation model based on the fuzzy analytic hierarchy process together with a fuzzy- DEMATEL.

288	<p>Sunday, 01:00 PM - 02:30 PM, International 3</p> <p>Session: Classroom Exercises that Teach and Excite</p> <p>Chair(s): Charles Munson</p>	Track: Scheduling and Logistics
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051-1308 Classroom Exercises that Teach and Excite

Barry Render, Emeritus Professor, Rollins College, United States

Jay Heizer, Emeritus Professor, Texas Lutheran Univ, United States

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

Ken Klassen, Professor, Brock University, Canada

Howard Weiss, , ,

Several classroom exercises suitable for operations management courses will be demonstrated, including a card shuffling exercise for time and motion studies, a "finding the e's" TQM exercise, a cookie-making exercise to introduce operations management, and an Excel application of the Dice Game that facilitates student ideas for improvement.

289	<p>Sunday, 01:00 PM - 02:30 PM, International 4</p> <p>Session: Behavior in Service Contexts</p> <p>Chair(s): Bente Flygansvaer</p>	Track: Behavior in Operations Management
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051-0543 Facilitating Operational Improvement through Creative Engagement

Chris Milner, Senior Lecturer, University of Portsmouth, United Kingdom

An empirical evaluation of operational & behavioral improvement initiatives, in the development of kaizen cycles, viral change and creative engagement within service operations. Significant facilitators and blockers are identified, impact and development are measured via A3's and the Creative Engagement Cycle of 'share, scene & sustain', contributing to existing knowledge.

051-0008 Discuss on Travel Companies How to Find Out More about their Customers and Offer them More Customized Deals

Sien Chen, , Xiamen University, China

Zhenyu Liu, Professor, Xiamen University, China

The paper empirically contributes to help airlines and travel agencies to analyses the online and offline data of their customers to target customers more personally during marketing and promotion campaigns. Big data and analysis tools are used in an attempt to make predictions on customer behavior.

051-1423 Evaluating A Transport Relationship Using Agency Theory

Bente Flygansvaer, Associate Professor, BI Norwegian Business School, Norway

Eirill Boe, Senior Lecturer, BI Norwegian Business School, Norway

Uncertainties in the performance of transport operations will drive forth different contract types, such as outcome and behaviour based contracts. This paper use agency-theory to understand which type of contract should be implemented in a transport buyer and service provider relationship. In particular we link the contracts to transport price formats. In order to increase efficiency in transport buyer and service provider relationships, we argue that the contracts need to be developed in a collaborative manner. Our empirical data is taken from a case study of collection of waste in two Norwegian municipalities.

051-1326 Searching for Better Qualities and Shorter Queues

Luyi Yang, Student, University of Chicago, United States

Laurens Debo, Associate Professor, University of Chicago, United States

Varun Gupta, Professor, University of Chicago, United States

We consider a many-server queueing system with Poisson customer arrivals and exponentially distributed service times. Servers have different qualities. The customer does not know the quality of the server and its queue length in advance, and is thus engaged in a sequential search. We characterize the equilibrium search behavior.

051-0744 Selling to Consumers with Social Interaction

Desheng Wu, Senior Lecturer, 3M Company, Canada

We consider a Newsvendor Selling to Consumers with Social Interaction. We investigate order and pricing decisions for this Newsvendor.

290	<p>Sunday, 01:00 PM - 02:30 PM, International 5</p> <p>Session: Service customization</p> <p>Chair(s): Kok Choon Tan</p>	Track: Service Operations
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051-0366 Technology-based Innovations in Service Encounters: Evaluation of Customer Preferences over Time

Min Kyung Lee, Student, Clemson University, United States

Michael Dixon, Assistant Professor, Naval Postgraduate School, United States

Aleda Roth, Professor, Clemson University, United States

Rohit Verma, Professor, Cornell University, United States

Use of telecommunications, touch-screen-based computing, and other technologies can enhance service delivery. Since customers co-produce services, their preferences play a significant role in success of any innovation. Hence, we study customer preferences for technology-based innovations in the US restaurant industry. Our results demonstrate the evaluation customer preferences for technology-based innovations.

051-0246 Exploratory Study of E-tailing Service Reliability Dimensions

Jin Qin, Associate Professor, University of Science and Technology of China, China
Qianqian Zhao, Student, University of Science and Technology of China, China

A questionnaire was developed to explore the dimensions of E-tailing service reliability. Survey was conducted and data was further analyzed through SEM analysis. Results indicate that E-tailing service reliability consists of five dimensions: product conformance, distribution reliability, information reliability, customer service reliability and web technology reliability.

051-0223 An Innovation in TA-Q-BIN Last-Mile Delivery

Kok Choon Tan, Associate Professor, National University of Singapore, Singapore
Liang Wei Ng, Manager, Housing Development Board, Singapore, Singapore

The superior service level that TA-Q-BIN provides in its last-mile delivery distinguishes itself from its competitors. This case study describes how the company customized its operation models to enhance its productivity while maintaining the high service level expected by its customers.

051-0046 Mass Customization in Higher Education: The Advent of The Vanguard Method

Ayham Jaaron, Assistant Professor, An-Najah National University, Palestinian National Authority
Christopher Backhouse, Professor, Loughborough University, United Kingdom

This paper presents novel form of service operations design by investigating its impact on the way the higher education system delivers customized services to students on a real-time basis. Using a case study methodology, the paper addresses benefits of applying this design in terms of student experience and administrative efficiency.

051-0823 Performance Indicators in a Lean Service Operation Fractional Approach

Alceu Antonioli Filho, Student, Universidade Nove De Julho, Brazil

The Lean Service fundamentals are based on Toyota Production System focusing the service industry in pursuit of perfection and service quality improvement. How to identify if a Lean Service operation fractional approach is reaching the target value planned? The Performance Indicators brings a quantitative and qualitative way to measure it.

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Sunday, 01:00 PM - 02:30 PM, International 6

Track: Supply Chain Management

Session: Information in Supply Chains

Chair(s): Noam Shamir

051-0135 Information Sharing within a SupplyChain for Durable Goods

Neda Khanjari, Assistant Professor, Rutgers University, United States
Hyoduk Shin, Assistant Professor, University of California San Diego, United States

When the retailer with better demand forecast than the manufacturer sells a durable product to the market, does the retailer have an incentive to share his forecast with the manufacturer? We show that the retailer's incentive for forecast sharing depends on the durability of the product in non-monotonic way.

051-0147 Supplier Encroachment as an Enhancement or a Hindrance to Nonlinear Pricing

Guoming Lai, Assistant Professor, University of Texas Austin, United States
Steve Gilbert, Professor, University of Texas Austin, United States
Zhuoxin Li, Student, University of Texas Austin, United States

The objective of this paper is to extend existing understanding of supplier encroachment to contexts in which there is information asymmetry and the supplier can use nonlinear pricing. We show that supplier encroachment can be either beneficial or detrimental for the supplier as well as the retailer.

051-0924 Cartel Formation through Strategic Information Leakage in a Distribution Channel

Noam Shamir, Assistant Professor, Tel Aviv University, Israel

A group of retailers attempt to establish a cartel. In order to reduce the risk of the cartel's exposure, the retailers coordinate their strategies by sharing information with their manufacturer. Although the manufacturer is not part of the cartel, he is willing to assist the retailers in such a scheme.

051-1272 Coordination of Project-Driven Supply Chains: The Optimal Structure of Delivery-Schedule-Based Contract

Shi Chen, Assistant Professor, Foster School of Business, University of Washington, United States
Hau Lee, Professor, Stanford University, United States

This paper considers a project-driven supply chain with a manufacturer and many suppliers. We show that the delivery-schedule-based contract consisting of a material delivery schedule, deposit and balance, and delay penalty can coordinate the channel. We further explore the information issue and the value of lean supply with this model.

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Sunday, 01:00 PM - 02:30 PM, International 7

Track: Supply Chain Management

Session: Behavioral Biases in Supply Chain Contracts

Chair(s): Anna Devlin

051-1042 Bounded Rationality in Supply Chain Interactions

Basak Kalkanci, Assistant Professor, Georgia Institute of Technology, United States
Georgia Perakis, Professor, Massachusetts Institute of Technology, United States

We investigate the impact of a retailer's bounded rationality in a two-tier supply chain. We show that the supplier's and retailer's profit are not necessarily monotone in the retailer's rationality. We quantify the value of using minimax regret criterion when the retailer's rationality is not known.

051-1070 Supply Chain Contract Design: Impact of Bounded Rationality and Individual Heterogeneity

Kay-Yut Chen, Principal Scientist, Hp Labs, United States

Yan Wu, Associate Professor, University of Kansas, United States

In this paper, we model and measure several forms of non-optimizing behavior, including recency effect, reinforcement, demand-chasing and anchoring and random decision errors, in a newsvendor setting under different types of supply chain contracts. A great deal of heterogeneity is discovered, indicating the importance of calibrating contract to the individual.

051-1109 The Effect of Contract Type on Risky Product Related Decisions

Anna Devlin, Student, University of Maryland, United States

Wedad Elmaghraby, Associate Professor, University of Maryland, United States

Rebecca Hamilton, Associate Professor, University of Maryland, United States

In this research we study experimentally if the type of contract offered influences the level of risk a retailer engages in when making product decisions. We first test if contract type influences the retailer's decision between two products and then extend this to subsequent order quantity decisions.

051-1273 Competition and Coordination in a Two-channel Supply Chain

Amy Davd, Student, University of Illinois at Chicago, United States

Elodie Adida, Assistant Professor, University of California Riverside, United States

We study competition and coordination in a supply chain in which a single supplier both operates a direct channel and sells its product through multiple retailers competing in quantities. We study efficiency and coordinating contracts and compare our findings with those of a single channel supply chain.

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Sunday, 01:00 PM - 02:30 PM, International 8

Track: Supply Chain Management

Session: Topical Issues in Supply Chain Management

Chair(s): Sanjay Ahire

051-0674 Understanding the Process by Which Public Standards are Developed: The Case of C-TPAT

Steve Melnyk, Professor, Michigan State University, United States

William Ritchie, Associate Professor, James Madison University, United States

John Nie, Assistant Professor, University of Rhode Island, United States

Certified standards play a critical role in SCM. Yet, little is known about how such standards develop and how a dominant standard emerges. Furthermore, public standards differ from private standards. This presentation examines on the development of a public standard by studying C-TPAT - an American public standard for border security.

051-0912 A Framework for Measuring the Quality of Supplier Procurement Schedules

Sanjay Ahire, Professor, University of South Carolina, United States

Manoj Malhotra, Professor, University of South Carolina, United States

Erin McKie, Student, University of South Carolina, United States

Supplier performance is limited by the customer firm's ability to provide accurate and reliable procurement schedules. We develop a conceptual framework and measurement instrument for measuring "supplier procurement schedule quality". Results from a survey of 40 suppliers of a large manufacturing firm are presented to support the validity of the instrument.

051-0235 When Larger Customers may Not Get Greater Discounts - Posted Prices and Bargaining in High-Tech Supply Chains

Wei Zhang, Student, University of California Los Angeles, United States

Reza Ahmadi, Professor, University of California Los Angeles, United States

Sriram Dasu, Associate Professor, University of Southern California, United States

Initially assuming that discount is an increasing function of demand share, we examine sales data from a multinational microprocessor maker and discover that this classic assumption doesn't hold for customers with demand share of 20% or higher. We explained this with a bargaining model and studied the optimal posted price.

051-1153 A Dyadic Theory of Trust in Buyer-Supplier Relationships and its Impact on Opportunistic Behavior

Scott DuHadway, Student, Michigan State University, United States

Ram Narasimhan, Professor, Michigan State University, United States

Trust has mixed implications in collaboration. Although it is generally viewed in a positive light, trust can lead to higher levels of vulnerability, opportunism, or conflict. A dyadic perspective on trust helps predicts performance of a relationship through opportunistic behavior, collaboration, and conflict.

294

Sunday, 01:00 PM - 02:30 PM, International 9

Track: Sustainable Operations

Session: Regulation Issues in Sustainable Operations

Chair(s): Kanwalroop Dhanda

051-0212 The Impact of Take-Back Legislation on Selling and Leasing Strategies

Ni Fang, Student, Hec Paris, France

Andrea Masini, Associate Professor, Hec Paris, France

We study the environmental and economic impact of product take-back legislation when firms can both sell and lease products. We demonstrate that such legislation affects the optimal sale-lease mix as well as the manufacturer's optimal production output and that its environmental benefits depend on collection efforts, disposal costs, reselling opportunities.

051-0444 Does Cap-and-Trade Enable Collusion?

Krishnan Anand, Associate Professor, University of Utah, United States

Francois Giraud-Carrier, Assistant Professor, University of Illinois at Springfield, United States

Carbon taxes and Cap-and-Trade are two leading approaches for pollution regulation. Proponents of Taxes have argued that Cap-and-Trade could facilitate collusion via the trading mechanism, leading to suboptimal welfare outcomes. We examine this claim using an integrated pollution-production model in which strategic firms compete for output and trade emission allowances.

051-0187 Carbon Policies in the Presence of Horizon Competition

Yanzhi Li, Associate Professor, City University of Hong Kong, Hong Kong
Zhaowei Miao, Professor, Xiamen University, China
Huiqiang Mao, Student, Xiamen University, China

We consider the impact of a variety of carbon policies in the presence of horizon competition. Using very simple models, we find very interesting insights; particularly, a tighter regulation might benefit the firms' profitability under certain conditions.

051-0029 Climate Legislation: An Examination of the Collapse

Kanwalroop Dhandra, Associate Professor, Depaul University, United States

Climate legislation passed in the House of Representatives in 2009 but failed in the Senate on July 22, 2010. What were the reasons for this failure? Using a lens of climate/environmental justice, this paper will examine factors that contributed to the demise of U.S. climate legislation.

295

Sunday, 01:00 PM - 02:30 PM, International 10

Track: Humanitarian Operations and Crisis Management

Session: Disaster Management and Challenges of Humanitarian Food Supply Chains

Chair(s): Cigdem Ataseven

051-0403 An Empirical Study on Food Bank Supply Chains

Cigdem Ataseven, Assistant Professor, Cleveland State University, United States
Anand Nair, Professor, Michigan State University, United States
Mark Ferguson, Professor, University of South Carolina, United States

The aim of this study is to gain insights about the linkages of supply side, internal, and demand side activities of food banks, and to investigate their impact on food distribution performance. The data from financial statements and operational information were merged to capture important aspects of food banking operations.

051-0736 Examining the Surplus Food Delivery Problem: Food Charities within the United States

Jack Crumbly, Assistant Professor, Tuskegee University, United States
Quintus Jett, Assistant Professor, Rutgers University, United States

As hunger increases throughout the United States, the effectiveness of food charities in feeding populations are critical. The research will employ a supply chain and operations perspective to enhance conceptual clarity and provide future directions in the research on food charities.

051-1264 Foodbanks and their Supply Chain Challenges

Almas Franken, Inbound Logistics, Coffee Industry, Netherlands
Kate Hughes, Student, Macquarie University, Australia

Many activities to alleviate poverty and suffering involve situations with variable supply and demand. These supply chains pose management challenges as they operate in an environment of high variation, often with limited resources. This case study presents supply chains for two different foodbanks. Edinburgh, UK and Amsterdam, the Netherlands.

051-0182 Disasters: Impact on Area Emergency Service Resources

Monique French Dooley, Associate Professor, University of Colorado Colorado Springs, United States
Ying Fan, Assistant Professor, University of Colorado Colorado Springs, United States
Gary Stading, Professor, University of Houston Downtown, United States

During disaster response, resources in and near the disaster are strained. A better understanding of how area emergency service resources are affected by a disaster can enhance preparation for when disaster strikes. Incident-related variables in a local fire district are studied before, during, and after major area incidents.

296

Sunday, 01:00 PM - 02:30 PM, International B

Track: Learning and Knowledge Management in OM

Session: Learning and KM in Healthcare

Chair(s): Anita Tucker

051-0219 The Nurse Manager Role in Quality Improvement Implementation on Hospital Units

Ashley-Kay Fryer, Student, Harvard University, United States
Anita Tucker, Associate Professor, Harvard University, United States

Little is understood about the middle manager role in healthcare quality improvement implementation. This study surveyed 500 hospital unit directors/managers across 22 hospitals to understand the strategies they employ when implementing quality improvement programs/initiatives and how their strategies relate to leadership and patient outcomes.

051-0643 Dynamic Social Network Analysis Affords Learning Opportunities in a Collaborative Chronic Care Network

Shannon Provost, Student, McCombs School of Business, United States
Francesca Grippa, Assistant Professor, Northeastern University, United States
Peter Margolis, Director of Research, James M. Anderson Center for Health Systems Excellence, United States
Reuben McDaniel, Professor, McCombs School of Business, United States
Peter Gloor, Research Scientist, MIT Center for Collective Intelligence, United States

"Digital exhaust" is a source of transparency and insight for complex system re-design projects. We observe healthcare innovation teams longitudinally with archival email data, exploring optimal network dynamics for collaborative knowledge exchange. Fluid structures and rotating leadership (operationalized with network centrality measures) are predictive of teams' performance and learning behaviors.

051-0973 Learning and Accountability in an ICU Redesign

Jill Marsteller, Associate Professor, Johns Hopkins Bloomberg School of Public Health, United States

We will discuss a suite of six interventions intended to create a learning and accountability system for Intensive Care Units seeking to prevent seven patient harms via an information technology solution, better engagement of patients and families and improved clinician relationships and management support. Contextual survey data will be shared.

051-1140 The Intersection of Hospitality and Healthcare: Opportunities for Research and Practice

Rohit Verma, Professor, Cornell University, United States

This presentation will provide a summary of insights from two industry roundtables on Healthcare and Hospitality Interface organized at Cornell. During each roundtable, nearly sixty participants from both industries shared their best practices, with the goal of finding common ground and cross-pollinating towards the development of improved operational strategies.

297

Sunday, 01:00 PM - 02:30 PM, International C

Track: Supply Chain Risk Management

Session: Supply Chain Networks and Risk

Chair(s): Nikolay Osadchiy

051-0080 Equilibria and Dynamics of Supply Chain Network Competition with Information Asymmetry in Quality and MQSs

Anna Nagurney, Professor, University of Massachusetts Amherst, United States

Dong Li, Student, University of Massachusetts Amherst, United States

In this paper, we construct a supply chain network model with information asymmetry in product quality. The competing, profit-maximizing firms, which may be located on-shore or off-shore, are aware of the quality of the product that they produce but consumers, at the demand markets, only know the average quality.

051-0074 Disentangling Production Smoothing from the Bullwhip Effect

Haim Mendelson, Professor, Stanford University, United States

Robert Bray, Assistant Professor, Northwestern University, United States

We develop new production smoothing measures that are robust to the bullwhip effect. We derive these measures from a structural econometric production scheduling model. We find that auto manufacturers actively smooth both production variability, which reflects all production fluctuations, and production uncertainty, which reflects only surprising production fluctuations.

051-1358 Risk Implications of Supply Chain Network Structure

Jing Wu, Student, University of Chicago, United States

John Birge, Professor, University of Chicago, United States

Supply chain networks provide a mechanism both for the risk mitigation through diversification and amplification through contagion. This talk will discuss a model in which both effects may be observed. We will discuss empirical results that suggest that the connectivity and centrality may have different risk effects depending on industry.

051-0834 The Business Tsunami Effect

Henk Akkermans, Professor, Tilburg University, Netherlands

Luk Van Wassenhove, Professor, INSEAD, France

In supply networks, companies suddenly are swamped by problems: cancellations, delays, complaints, or relationship crisis. Paper introduces "business tsunami" as management concept, different from bullwhip and black swan phenomena. Discusses common underlying causal structures and destructive effects of different types with real-world examples and implications for OM research and practice.

299	<p>Sunday, 02:45 PM - 04:15 PM, A602 <i>Track: General Track</i></p> <p><i>Session:</i> Playing an Online Game Used to Teach Operations Management</p> <p><i>Chair(s):</i> Sam Wood</p>
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- 051-1431** Play An Award-Winning Online Game Used to Teach Operations Management
Sam Wood, President, Responsive Learning Technologies, United States

In 2004 POMS awarded the Wickham Skinner Award for Teaching Innovation for the development of a competitive online simulation-based assignment named Littlefield Technologies. Last year the game was used in introductory operations courses at the undergraduate, graduate, and executive level around the world. In this interactive session, participants will play an actual game compressed to 45 minutes and discuss how online games can be used effectively. Although not required, attendees are encouraged to bring a laptop to the session.

300	<p>Sunday, 02:45 PM - 04:15 PM, A701 <i>Track: Closed Loop Supply Chains</i></p> <p><i>Session:</i> Optimization and Network Design of CLSCs</p> <p><i>Chair(s):</i> Shailesh Kulkarni</p>
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- 051-0801** Optimal Control of a Hybrid Manufacturing/Remanufacturing System with Uncertain Supply of Cores
Peng Wu, Associate Professor, Sichuan University, China
Xiuli Chao, Professor, University of Michigan Ann Arbor, United States
Jian Chen, Professor, Tsinghua University, China

This paper studies a periodic-review production planning problem with hybrid manufacturing and remanufacturing operations. Manufacturing is expensive and reliable while remanufacturing is inexpensive but has uncertain supply (used products or cores/acquired). Our analysis of the trade-off between manufacturing and remanufacturing shows that the optimal policy is a quota-control policy.

- 051-1235** Network Configuration for Closed-loop Supply Chains: Models and Insights
David Francas, Senior Consultant, Camelot Management Consultants AG, Germany
Shailesh Kulkarni, Associate Professor, University of North Texas, United States
Hakan Tarakci, Assistant Professor, University of North Texas, United States
Stefan Minner, Professor, Technische Universität München, Germany

We investigate optimal network configurations of closed-loop supply chains where manufacturing and remanufacturing processes are conducted in the same facility or each process is dedicated to separate facilities. Our analysis also considers that demand for new and remanufactured products can be either fully substitutable or, segmented into two distinct markets.

- 051-0194** Evaluating Performance of an Integrated Flexible Reverse Enterprise System (RES)
Jitendra Madaan, Assistant Professor, Indian Institute of Technology, New Delhi (IITD), India
M P Gupta, Professor, Indian Institute of Technology, New Delhi (IITD), India

This paper proposes an integrated flexible Reverse Enterprise System (RES) which aims at enterprises to assessing their returns management capability, benchmarking best practices, and improving overall performance. The proposed model is a extension of conventional reverse supply chains and can be readily implemented on a simulation platform.

- 051-0710** Reverse Logistics and Environment Preservation: Successful Cases in Brazil
Orlando Cattini Junior, Associate Professor, Fundacao Getulio Vargas, Brazil

Analysis of successful cases in return chain structuring and the application of reverse logistics concepts for recycling and environmentally correct disposal of hazardous solid waste in Brazil. The focus is on plastic containers and packaging for agrochemicals and lubricant oil.

301	<p>Sunday, 02:45 PM - 04:15 PM, A702 <i>Track: Purchasing and Supply Management</i></p> <p><i>Session:</i> Public private partnerships and public procurement</p> <p><i>Chair(s):</i> Nunzia Carbonara</p>
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- 051-0535** Participation and Success in Public Procurement: The Case of SMEs
Alessandro Ancarani, Associate Professor, University of Catania, Italy
Carmela Di Mauro, Associate Professor, University of Catania, Italy
Tara Hartley, Director, OSME, Public Works and Government Services Canada, Canada

This paper investigates SMEs participation and success in public procurement. Evidence from Canadian data suggests that participation depends on the availability of human resources. Award depends on firms' comparative advantages in terms of reputation, knowledge. SMEs which have been in the public market for longer tend to be favoured.

- 051-1218** Availability Payment Design in Public Private Partnerships
Qingbin Cui, Assistant Professor, University of Maryland, United States
Xinyuan Zhu, Student, University of Maryland, United States

This paper presents a bi-level stochastic model to optimize availability payment design. We propose a discrete time-varying linear dynamical system with an affine controller to make the NP-hard program solvable. We use an infrastructure public private partnership project to validate the effectiveness and efficiency of the proposed model.

- 051-1219** Risk-Bearing Capacity Testing of and within PPP Projects
Jennifer Firmenich, Lecturer, ETH Zurich, Switzerland

The concept of risk-bearing capacity testing will be adapted to PPP projects and the PPP players. This allows for transparency and an in-depth analysis of the project's risk situation. The contractual PPP risk allocation will be rationalized and thus enhanced.

- 051-1250** Risk Management in PPP Projects: An Empirical Study on the Motorway Sector
Nunzia Carbonara, Associate Professor, Politecnico Di Bari, Italy

Nicola Costantino, Professor, Politecnico Di Bari, Italy
 Roberta Pellegrino, Associate Professor, Politecnico Di Bari, Italy
 Louis Gunnigan, Lecturer, Dublin Institute of Technology, Ireland

Based on the results of a Delphi survey conducted among a list of experts, the paper provides a guideline for both public and private parties in defining a list of significant risks in PPP motorway projects, preparing a practical risk allocation framework and identifying the most suitable mitigation strategies.

302	Sunday, 02:45 PM - 04:15 PM, A703	<i>Track:</i> Product Innovation and Technology Management
	<i>Session:</i> Alternative Applications of NPD	
	<i>Chair(s):</i> Karuna Jain	

051-0737 Restructuring Process of NPD in a Public Institution of Science and Technology.
 Antonio Vasconcelos Neto, Student, Fundacao Getulio Vargas, Brazil

This work present a restructuring of the NPD process held in an Institution of Science and Technology, which is one of the world leaders in their field. The survey was conducted along the lines of Action Research. The results were obtained from the understanding of R&D as the Operations Area.

051-0799 The Franchising Process: A Proposal for a Method for Successful Implementation
 Rafael Pina, Student, Universidade Federal De Juiz De Fora, Brazil
 Luiz Alves, Professor, Universidade Federal De Juiz De Fora, Brazil

The study evaluates Franchising by conducting a Franchisors and Franchisees Survey in Southeastern Brazil. The key success factors and major difficulties in its implementation were identified. It suggests a method to guide small-business entrepreneurs in properly franchising their business, reducing the chances of failure.

051-1386 Empirical Study on Relationship between Knowledge Attributes and Innovation Performance
 Jun Han, Student, Tongji University, China
 Xinghui Lei, Professor, Tongji University, China
 Qi Gao, Student, Tongji University, China
 Yiran Chen, Assistant Professor, Tongji University, China

This paper constructs the theoretical model of knowledge attributes, capacities involved in cooperative innovation process which include knowledge-absorbing capacity and knowledge-transferring capacity, and innovation performance. By analyzing data which come from 377 firms in Wanjiang economic zone, it reveals that knowledge attributes has significantly positive effect on these variables.

051-1417 Multimethodology Approach to Mangement of Technology Research: An Indian Experience
 Karuna Jain, Professor, National Institute of Industrial Engineering, India
 Mukundan R, Assistant Professor, National Institute of Industrial Engineering, India
 Ruchita Gupta, Assistant Professor, National Institute of Industrial Engineering, India

Straddling from concept generation to social impact, a Management of Technology researcher is exposed to multiple paradigms. In this paper, recent multimethodological approaches used by us in management of technology research studies conducted in India are presented.

303	Sunday, 02:45 PM - 04:15 PM, A704	<i>Track:</i> Retail Operations Management
	<i>Session:</i> Retail Operations	
	<i>Chair(s):</i> Peeyush Mehta	

051-0010 The Planning for the Cross-Docking Operations of a Large Supermarket Retail Supply Chain
 Shong-lee Su, Professor, Soochow University, Taiwan, Republic of China
 Chien-Jung Liao, Consultant, Soochow University, Taiwan, Republic of China

With the knowledge accumulated from participating the first cross-docking network development, this paper summarizes the key planning and modeling issues for the cross-docking operations of a large supermarket retail chain in Taiwan. The insights gained from this study can aid large retail chains to better plan their cross-docking operations.

051-0239 Integration of Lean Operation and Pricing Strategy in Retail
 Toru Noda, Student, University of Tsukuba, Japan

The study provides a better understanding of lean operation and Everyday Low Price model in the retail for developing an alternative business model to the existing high & low pricing model. The study stresses importance of integration of marketing and operation as a corporate strategy to develop a suggested model.

051-0528 Retail Shelf-Space Stocking Policies with Endogenous Demand Uncertainty
 R K Amit, Assistant Professor, Indian Institute of Technology Madras, India
 Peeyush Mehta, Associate Professor, Indian Institute of Management Calcutta, India

We develop an optimal retail shelf-space stocking policy when demand, in addition to the exogenous uncertainty, is influenced by the amount of inventory displayed on the shelves. Our solution approach exploits stochastic dominance condition that models that impact of supply on the demand distribution. We provide managerial implications for retailers.

304	Sunday, 02:45 PM - 04:15 PM, A705	<i>Track:</i> Healthcare Operations Management
	<i>Session:</i> Measuring Public Health Outcomes	
	<i>Chair(s):</i> Evin Jacobson	

051-0467 Dynamic Monitoring and Control of Chronic Diseases With a Case Study of Glaucoma
 Pooyan Kazemian, Student, University of Michigan Ann Arbor, United States
 Jonathan Helm, Assistant Professor, Indiana University, United States
 Mariel Lavieri, Assistant Professor, University of Michigan Ann Arbor, United States

Joshua Stein, Assistant Professor, University of Michigan Ann Arbor, United States
Mark Van Oyen, Associate Professor, University of Michigan Ann Arbor, United States

We develop stochastic control theory to improve chronic disease management by determining (1) the optimum times and set of tests to take, (2) the optimum level of controllable disease risk factors. This yields better outcomes with fewer resources, impacting a major public health burden. We apply our model to glaucoma.

051-0613 Cost Effectiveness of Improving Retention in Care for HIV-Infected Persons in the United States

Yu Teng, Prevention Effectiveness Fellow, Centers for Disease Control and Prevention, United States

Antiretroviral treatment dramatically improves life expectancy for persons living with HIV and reduces HIV transmission risk for those HIV-infected persons who remain in care. We examine the cost-effectiveness of strategies to promote retention in care using the Progression and Transmission of HIV/AIDS (PATH) model, an agent-based simulation model.

051-0614 From Theory to Practice: Implementation of a Resource Allocation Model in Four Health Departments

Emine Yaylali, Prevention Effectiveness Fellow, Centers for Disease Control and Prevention, United States
Stephanie Sansom, Prevention Modeling Economics Team Lead, Centers for Disease Control and Prevention, United States
Arielle Lasry, Senior Service Fellow, Centers for Disease Control and Prevention, United States

Few resource allocation models have been distributed and evaluated across multiple sites. We developed an HIV resource allocation model that was piloted and evaluated in 4 health departments. We present health departments' evaluations of their use of the model and its results.

051-0760 The Complexity of Measuring National Health Security Preparedness with an Index

Evin Jacobson, Preventive Effectiveness Fellow, Centers for Disease Control and Prevention, United States

With input from more than 25 stakeholder organizations, the first version of the National Health Security Preparedness Index (NHSPI[®]) was released publicly on December 4, 2013. The Index contains 128 measures from 36 data sources. We analyzed the complex process of combining measures to give a single index value.

305

Sunday, 02:45 PM - 04:15 PM, A706

Track: Healthcare Operations Management

Session: Cancer and Chronic Disease Treatment Plans

Chair(s): Bruce Golden

051-0686 Data Mining Evaluated IMRT Plans to Rank Potential Beam Angle Sets

Stuart Price, Student, University of Maryland, United States
Bruce Golden, Professor, University of Maryland, United States
Edward Wasil, Professor, American University, United States
Hao Zhang, Assistant Professor, University of Maryland School of Medicine, United States

Constructing IMRT plans to treat cancer patients involves selecting beam angles and then selecting beam intensities. Fully evaluating beam intensities is computationally expensive. We use data mining algorithms on previous IMRT plans to rank new beam angle sets for potential quality, reducing the number that need to be fully optimized.

051-0609 Capacity Planning for Cancer Prevention

Aaron Ratcliffe, Assistant Professor, University of North Carolina Greensboro, United States
Ann Maruchek, Professor, University of North Carolina Chapel Hill, United States
Wendell Gilland, Associate Professor, University of North Carolina Chapel Hill, United States

We analyze a queuing network to study the relationship between screening guidelines and capacity planning for colorectal cancer. The screen provider chooses its capacity to balance the cost of cancer detection delay with the cost of additional capacity. Patients spend a random time at home before scheduling a repeat screen.

051-1355 Modeling Chronic Disease Patient Flows

Rafael Diaz, Associate Professor, Old Dominion University, United States
Joshua Behr, Associate Professor, Old Dominion University, United States

This study models chronic disease patient flows as they engage in various healthcare services within a Medical Group. The model considers critical confounders that influence the propensity of patients to seek medical attention in a particular venue. Markov Chains and Monte Carlo are employed to characterize and simulate these transitions.

051-0683 Simulating Scheduling Policies for a Proton Therapy Treatment Center

Stuart Price, Student, University of Maryland, United States
Bruce Golden, Professor, University of Maryland, United States
Edward Wasil, Professor, American University, United States
Hao Zhang, Assistant Professor, University of Maryland School of Medicine, United States

Proton therapy is an outpatient procedure used to treat cancer. We constructed a simulation of a proton therapy treatment center to test scheduling policies to ensure efficient usage of equipment and reduce patient waiting times. These centers face many uncertainties including treatment times, patient arrival times, and patient absenteeism.

306

Sunday, 02:45 PM - 04:15 PM, A707

Track: Product Innovation and Technology Management

Session: Industry Studies in Innovation

Chair(s): Marcus Bellamy

051-0479 Incentives to Invest in Pollution Abatement Innovations under Cap, Cap-and-Trade and Tax

Krishnan Anand, Associate Professor, University of Utah, United States
Francois Giraud-Carrier, Assistant Professor, University of Illinois at Springfield, United States

We compare the firms' incentives to adopt abatement innovations under three pollution regulations--a pollution cap, a cap-and-trade system and an emission tax--when firms are strategic. The innovation lowers the firms' marginal abatement costs but is costly to adopt. Output, profit and welfare outcomes are also analyzed and compared across mechanisms.

051-0603 Making the Business Case for Continuous Manufacturing in the Pharmaceutical Industry

Tomás Harrington, Associate Professor, Cambridge University, United Kingdom
Leila Alinaghian, Student, University of Cambridge, United Kingdom
Jagjit Singh Srail, Cambridge University, United Kingdom

On-going new technology development in Continuous Manufacturing (CM) has enabled the potential for significant step changes within the Pharmaceutical sector i.e. shifting from 'batch' to 'continuous' processing. However, current adoption rates of CM remain at 5%. This research explores the supply network challenges and business case for CM.

051-1420 Innovation in Mobile Services: Cases from India

Ruchita Gupta, Assistant Professor, National Institute of Industrial Engineering, India
Dharmesh Gupta, Student, Indian Institute of Technology Bombay, India
Karuna Jain, Professor, National Institute of Industrial Engineering, India

To remain competitive in the mobile services markets, mobile service providers are focusing on service design, delivery and new business models. We study select mobile services (B2B, B2C) and map the process of innovation in service design and deliver on e-TOM framework in India.

307

Sunday, 02:45 PM - 04:15 PM, A708

Track: Revenue Management and Pricing

Session: New Models in Revenue Management and Pricing

Chair(s): Sami Najafi

051-0451 Dynamic Pricing for Digital Goods with Consumer Reviews

Qiao-Chu He, Student, University of California Berkeley, United States
Ying-Ju Chen, Assistant Professor, University of California Berkeley, United States

We propose a dynamic monopoly pricing model, in which consumers sequentially learn about product quality from historical ratings. Through transient analysis, we identify the downward distortions in the optimal reputation-building prices. The model is extended to study the optimal strategies for persuasive advertisements, quality controls, and competitive pricing.

051-0485 Newsvendor Selling to Loss Averse Consumers with Stochastic Reference Points

Sami Najafi, Assistant Professor, Santa Clara University, United States
Opher Baron, Associate Professor, University of Toronto, Canada
Ming Hu, Assistant Professor, University of Toronto, Canada
Qu Qian, Assistant Professor, Shanghai University of Finance and Economics, China

We study a profit-maximizing firm selling a single perishable product to loss averse consumers with stochastic reference distribution, which is their probabilistic beliefs about the price and purchase outcome. We show that the firm can benefit consumers' loss aversion by selling it at a price higher than consumers' valuation.

051-0491 Foundations of Social Network Ad Optimization

John Turner, Assistant Professor, University of California Irvine, United States

We introduce revenue optimization models for placing ads in social networks, motivated by the connectivity structure of the underlying graph. We discuss some pros and cons of the underlying models, and illustrate our approach using real social graphs.

051-1012 Strategic Consumers, Myopic Retailers

Mirko Kremer, Assistant Professor, Penn State University State College, United States
Benny Mantin, Assistant Professor, University of Waterloo, Canada
Anton Ovchinnikov, Assistant Professor, University of Virginia, United States

We consider a two-period setting where retailers face a fixed cohort of consumers consisting of myopic and strategic consumers. An experimental study is carried out to investigate the equilibrium results. We find and quantify the degree of myopia retailers exhibit in the presence of strategic consumers behavior.

051-1212 Recent Developments in Dynamic Pricing Research

Zhi-Long Chen, Professor, University of Maryland, United States
Ming Chen, Assistant Professor, California State University Long Beach, United States

We identify most recent trends in dynamic pricing research involving problems of selling a given amount of inventory over a finite time horizon without inventory replenishment. We review existing research on three new classes of problems that have attracted a rapidly growing interest in the last several years.

309

Sunday, 02:45 PM - 04:15 PM, M101

Track: Information Systems

Session: Economics of Online Platforms

Chair(s): Mike Frutiger

051-0498 Is Offering Social Network Platform Integration Valuable for a Web Site? A Randomized Field Experiment

Mike Frutiger, Student, Georgia Institute of Technology, United States
Eric Overby, Assistant Professor, Georgia Institute of Technology, United States
D.J. Wu, Associate Professor, Georgia Institute of Technology, United States

Although web sites increasingly allow users to log in using their credentials from social networks such as Facebook, it is not clear whether this actually leads to increased user registration and/or engagement. We use a randomized field experiment to test the value of Facebook integration for a social web application.

051-0604 The Software-as-a-Service Model: Elaborating Client-Side Adoption Factors

Mingdi Xin, Assistant Professor, University of California Irvine, United States

Software-as-a-Service (SaaS) model largely replaced the Application Service Providers (ASPs)-based model, by creating an architecture that provides no mechanisms for customizing the software on the vendor side; all customization is done on the client side through standardized interfaces. In this paper we investigate client's side determinants of adopting SaaS.

- 051-0827** Integration and Bilateral Sabotage
 Hong Guo, Assistant Professor, University of Notre Dame, United States
 Yabing Jiang, Assistant Professor, Florida Gulf Coast University, United States
 Asoo Vakharia, Professor, University of Florida, United States

We study integrations of firms in two interrelated markets that produce perfect complements. A unique phenomenon arises in this setting as the integrated firm could engage in bilateral sabotage. Interestingly, we find that the firm only sabotages one market due to the negative impact of sabotage on its own product.

- 051-1330** Higher Education in a Platform World
 Geoffrey Parker, Professor, Tulane University, United States

Higher education is facing unprecedented change as old business models fail and new value propositions must be created. The existing model of cross-subsidized research is under pressure and may be unsustainable as currently organized. We survey the drivers of change and some potential paths for adaptation and growth.

310	Sunday, 02:45 PM - 04:15 PM, M102	<i>Track:</i> Inventory Management
	<i>Session:</i> Inventory and Pricing Models	
	<i>Chair(s):</i> Georg Schorpp	

- 051-0016** Inventory Models for Deteriorating Items with Discounted Selling Price and Stock Dependent Demand
 Fidel Torres, Professor, Universidad De Los Andes, Colombia
 Freddy Pérez, Student, Industrial Engineering Department Bogota, Colombia, Colombia

New families of inventory models are developed with pre- and post-deterioration discounts when demand is initially stock dependent and then becomes constant. Shortages are allowed and partially backordered depending on the waiting time for the next replenishment. Furthermore, the time value of money is considered over a fixed planning horizon.

- 051-0306** On the Delayed Inventory Pricing Schemes
 Shengyuan Chen, Assistant Professor, York University, Canada
 Kai Huang, Assistant Professor, McMaster University, Canada
 Ming Zhao, OR Analyst, Sas Institute, United States

In business, there are situations where contractual supplies are determined a priori, the decision maker solely depends on price flexibility to maximize the revenue. This is called delayed pricing in Chan et al. (2006). We study three different delayed pricing schemes in this research.

- 051-0617** Impact of Carbon Prices on Inventory Policies in a Closed-Loop System
 Marthy Garcia Alvarado, Student, École de technologie supérieure, Canada
 Marc Paquet, Associate Professor, École de technologie supérieure, Canada
 Amin Chaabane, Assistant Professor, École de technologie supérieure, Canada

We consider a closed-loop system under a cap-and-trade scheme, where replenishment decisions are made in coordination with carbon management policies. Formulated as a stochastic dynamic programming, the objective is to evaluate the impact of carbon prices on inventory policies. The results provide insights into the structure of the optimal policy.

- 051-0951** Inventory Management and Pricing of Perishable Goods with Two Periods of Shelf Life
 Georg Schorpp, Student, Stanford University, United States
 Feryal Erhun, Assistant Professor, Stanford University, United States

Inventory management for platelets is challenging due to an extremely short product life cycle, a high unit production cost, a limited pool of platelet donors, and a high demand uncertainty. In this paper, we study a buyer's inventory policy and a supplier's pricing problem for a setting motivated by platelets.

311	Sunday, 02:45 PM - 04:15 PM, M103	<i>Track:</i> Manufacturing Operations
	<i>Session:</i> TQM, lean and six sigma	
	<i>Chair(s):</i> Bram De Jonge	

- 051-0941** Influences of Aging and Work Experience: An Ergonomic Approach in the Workgroup in a Assembly Line
 Gabriela Nunes, Student, Universidade Federal De São Carlos, Brazil
 Joao Camarotto, Professor, Universidade Federal De São Carlos, Brazil

Analyze the influences of aging on work activity to identify the strategies adopted by workers in a assembly line with workgroup. This study has hypothesized that workers develops a collaborative tacit knowledge between young and experienced workers.

- 051-0696** A General Framework for Comparing Condition-Based Maintenance with Age-Based Maintenance
 Bram De Jonge, Student, University of Groningen, Netherlands
 Ruud Teunter, Professor, University of Groningen, Netherlands
 Tiedo Tinga, Professor, Netherlands Defence Academy, Netherlands

Condition-based maintenance (CBM) is often preferred over age-based maintenance because of its just-in-time nature. However, the performance of CBM strongly depends on the deterioration process, cost structure, setup time, accuracy of condition information and uncertainty in the failure level. We present a general framework for assessing the benefits of CBM.

- 051-1043** Literature Review of Quality Management and Product-Service System: Opportunities for Research
 Cristiane Anacleto, Student, Universidade Federal De Santa Catarina, Brazil
 Edson Paladini, Associate Professor, Universidade Federal De Santa Catarina, Brazil

We searched on the evolution of the theory of product-service system (PSS) from the perspective of quality management. It is observed that few articles discuss the PSS from the perspective of the consumer. The articles are analyzed based on the various topics of quality management research opportunities were identified.

051-1287 Two-Sided Assembly Line Balancing of Refrigeration Assembly Lines

Lamia Shihata, Assistant Professor, Ain Shams University, Egypt

Raghda Taha, Student, Arab Academy for Science and Technology and Maritime Transport, Egypt

The application of lean manufacturing on pre-assembly and final assembly activities lines is attempted. Value stream mapping and a two-sided assembly line balancing genetic algorithm are applied. A case study in a household appliance company was considered for reaching the best flow solutions in the refrigerators assembly line.

312	Sunday, 02:45 PM - 04:15 PM, M104	Track: OM and Economic Models
	Session: Information in Supply Chains	
	Chair(s): Noam Shamir	

051-0160 Honesty in Incomplete Supply Chain Contracts

Manu Goyal, Assistant Professor, University of Utah, United States

Krishnan Anand, Associate Professor, University of Utah, United States

He Chen, Student, University of Maryland, United States

In a world with bounded-rationality, we study a multi-period contractual relationship between a manufacturer and his supplier. We prove that a profit-maximizing manufacturer, constrained by honesty, can outperform the quintessential unconstrained profit-maximizer, even though the 'unconstrained' manufacturer can mimic the 'honest' manufacturer. Thus, honesty emerges endogenously as an optimal policy.

051-0210 Optimal Long-Term Supply Contracts with Asymmetric Demand Information

Ilan Lobel, Assistant Professor, New York University, United States

Wenqiang Xiao, Associate Professor, New York University, United States

We consider a manufacturer's optimal dynamic contract problem with a retailer who is privately informed about demand. We show that the optimal contract takes a simple form: a first period payment followed by wholesale pricing in future periods.

051-0928 Public Forecast Information Sharing in a Market with Competing Supply Chains

Noam Shamir, Assistant Professor, Tel Aviv University, Israel

Hyoduk Shin, Assistant Professor, University of California San Diego, United States

Studying the motivation to publicly announce forecast information, we show that by making forecast information publicly available to both his manufacturer and the competitor, a retailer is able to credibly share his forecast information - an outcome that cannot be achieved by exchanging information within the supply chain.

051-1297 How Delay Announcements Shape Customer Behavior: An Empirical Study

Gad Allon, Associate Professor, Northwestern University, United States

Achal Bassamboo, Associate Professor, Northwestern University, United States

Qiuping Yu, Student, Northwestern University, United States

We explore the impact of delay announcements by studying the data from a medium sized call center, where customers are provided with anticipated delay. Our key insights show that delay announcements not only impact customers' beliefs about the system, but also directly impact customers' per unit waiting cost. Specifically, customers'.

313	Sunday, 02:45 PM - 04:15 PM, M106	Track: OM Practice
	Session: Business Processes in OM Practice	
	Chair(s): Richard Franza	

051-0564 Sustaining Process Improvements

Richard Franza, Professor, Kennesaw State University, United States

Satya Chakravorty, Professor, Kennesaw State University, United States

Douglas Hales, Associate Professor, University of Rhode Island, United States

Despite the increasing emphasis of process improvement programs, there is a rising concern regarding their sustainability. Several studies indicate that improvements gained from such program dissipate over time. We examine this phenomenon through a study of process improvement programs of aircraft manufacturing and distribution operations.

051-0116 Introducing a Hybrid Business Process Mapping Model

Yousef AL-Turki, Assistant Professor, KING ABDULAZIZ CITY FOR SCIENCE & TECHNOLOGY, Saudi Arabia

Business process mapping has been heralded as a key method for improving Business Process Management. Thereby enhancing the efficiency and effectiveness of business operations. There are a number of critical success factors however that need to be in place in order to attain this. One of them is the method or technique to be used for the capture, documentation, modelling, communication and improvement of business processes. There exist a wide plethora of methods, each of them with a particular area of focus. This paper aims to select two of the common systems; Flow chart and IDEF0 and consider a hybrid model of process modelling that can avail complementary strengths and address gaps that exist within each of the approaches. The proposed model was tested against the scenario of manufacturing business process activities in order to assess and demonstrate its capabilities. A hybrid approach was developed and implemented against this scenario. It was found that the hybrid approach did manage to address gaps effectively. The new system offered greater precision, smoothness of activity flow and improved sequencing meanwhile retaining a level of simplicity that maintained the usability of the method. Nonetheless, the challenges that bear upon the success of process mapping continue to be relevant. process mapping focuses on the aspect of process change. Where insufficient attention is given to organizational change, process mapping projects will not reap the expected benefits.

051-0720 7A Model - A Process Selection Guide for Lean Implementation

Gopalakrishnan Narayanamurthy, Student, Indian Institute of Management Kozhikode, India

Anand Gurumurthy, Associate Professor, Indian Institute of Management Kozhikode, India

7A process selection model has been developed to guide in identifying a suitable process for lean implementation. 7A in the process selection framework denote autonomy, approachability/accessibility, associativity/alignment, assessable, affordability, acceptability and achievability. Model developed was based on literature and was validated by implementing it real time in a service organization.

314	<p>Sunday, 02:45 PM - 04:15 PM, International 2</p> <p>Session: Programs, Collaboration and Integration</p> <p>Chair(s): Michele Acciaro</p>	<p>Track: General Track</p>
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- 051-1396** The Influence of ERP Implementation on Reduction of Global Markets' Unexpected Fluctuations Risk
nooshan aliee, Student, Graduate Faculty of Environment, University of Tehran, Iran (Islamic Republic of)
Mahdi Abbasi, Reader, Islamic Azad University -Toyserkan Branch, Iran, Iran (Islamic Republic of)

This study evaluates 20 companies which has been divided in 2 groups based on ERP implementation, first category has used ERP once the second one does not apply it, in order to determine and compare the volatility of global markets by sudden Fluctuation. Applied method is modified fuzzy vulnerability

- 051-0134** The Development of Multimodality as well as Mandatory Way for Better Management of Collaborative Logistic.
Washington Luiz Soares, Student, UNISANTA - UNIVERSIDADE SANTA CECÍLIA, Brazil
Jessica Elise Soares, Student, UNISANTOS, Brazil
Jonathan Soares, Student, ESTACIO DE SA UNIVERSITY, Brazil

The proposal of this exploratory research focuses the indicators for management by intermodal transport business. As there are public transport policies, through the construction of new private use terminals in Brazil. The study is to identify the qualitative benefits from integrated logistics, for better productivity of railway and multimodal system.

- 051-0829** Seaport Efficiency in South East Asia
Michele Acciaro, Assistant Professor, Kuehne Logistics University, Germany

The rapid development of South East Asia requires efficient transportation. Give the insularity of most countries in the region, the efficiency of maritime transport and ports is critical. The paper discusses the first comprehensive application of DEA to container ports in the region.

315	<p>Sunday, 02:45 PM - 04:15 PM, International 3</p> <p>Session: Sustainable Logistic and Operations Management</p> <p>Chair(s): Yu Xia</p>	<p>Track: Scheduling and Logistics</p>
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- 051-0392** Decision Model and Algorithm Design for Disruption Recovery of Infrastructure
Gang Li, Assistant Professor, Bentley University, United States
Xiangtong Qi, Associate Professor, Hong Kong University of Science & Tech, Hong Kong

Sustainable logistic management requires robust infrastructure design and the agility of quickly recovering from unexpected disruption. We investigate how a disrupted infrastructure should be recovered during the transition period of recovery with minimum cost and shortest time.

- 051-0909** Examining Extent of Sustainable Logistics Practices in US Hospital Supply Chains
Gilbert Nyaga, Associate Professor, Northeastern University, United States

Adoption of sustainable practices in US hospitals' logistics management has potential to lower cost and enhance clinical performance. However, practices such as product re-use and lean inventory are not commonly used in hospitals operations. This study examines underlying theoretical and managerial factors influencing adoption of logistics sustainable practices in hospitals.

- 051-0180** High Speed Rail: America's "LINK" to the Future.
Raj Selladurai, Associate Professor, Indiana University, United States

Focus would be on high speed rail as a viable option to supplement road and other modes of travel in Indiana, Midwest, and the US. Need, impact, benefits of high speed rail, and ongoing research studies would be presented. High Speed Rail would certainly be the "LINK" to the future.

- 051-0534** Infrastructure Expansion in Brazilian Airports: A Slack Analysis Using a Distance Friction Minimization
Peter Wanke, Associate Professor, Federal University of Rio De Janeiro, Brazil
Edgar Damacena Jr, Student, Federal University of Rio De Janeiro, Brazil

The present paper uses DEA and a distance friction minimization (DFM) approach with fixed factors developed by Suzuki and Nijkamp (2011) to assess the fitting between expected demand for the next 25 years and the infrastructure expansion investments announced by Infraero (Brazilian Airport Authority) for Rio de Janeiro International Airport

316	<p>Sunday, 02:45 PM - 04:15 PM, International 4</p> <p>Session: Behavioral Issues in Manufacturing Contexts</p> <p>Chair(s): Federica De Stefanò</p>	<p>Track: Behavior in Operations Management</p>
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- 051-0391** Incentives for Implementing Corporate Lean Programs
Torbjørn Netland, Assistant Professor, NTNU, Norway
Jason Schloetzer, Associate Professor, Georgetown University, United States
Kasra Ferdows, Professor, Georgetown University, United States

This study examines how firms use incentives to implement corporate lean programs. The analysis uses performance scorecard and survey data collected from a global manufacturer regarding plant-level implementation and associated operational and financial performance. We identify incentives that are associated with higher and lower levels of lean program implementation.

- 051-0532** Adoption of Lean and Quality Methods in Auto Parts Companies
Lilian Souza, Lecturer, Faculdade Anhanguera de Anápolis, Brazil
Alessandra Rachid, Associate Professor, Federal University of São Carlos, Brazil

The paper will examine the adoption of lean production and quality methods in auto parts companies and if shop floor workers are involved in its use. The paper is the result of a survey in 95 companies in Brazil. There is involvement in most methods, except for a newer method.

- 051-0792** Safety in Lean Operations: The effect of TPM and Workers' Autonomy
 Arnaldo Camuffo, Professor, Bocconi University, Italy
 Federica De Stefano, Student, Bocconi University, Italy
 Chiara Paolino, Assistant Professor, Università Cattolica del Sacro Cuore, Italy

This paper investigates the relation of TPM and workers' autonomy to Safety in Lean Manufacturing. We use an original data-set from the international operations of a leading tyre producer. We find that TPM is positively associated to safety and that workers' empowerment to develop work-related standards positively moderates this effect.

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| 317 | Sunday, 02:45 PM - 04:15 PM, International 5 | <i>Track:</i> Service Operations |
| | <i>Session:</i> Service Planning and Scheduling | |
| | <i>Chair(s):</i> Seung Jun Lee | |

- 051-0101** U.S. Coin Supply Chain: Supply, Recycling and Inventory Management
 Yiwei Huang, Student, Texas A&M University College Station, United States
 Neil Geismar, Associate Professor, Texas A&M University College Station, United States
 Chelliah Sriskandarajah, Professor, Texas A&M University College Station, United States

We investigate operational issues in the U.S. Coin Supply Chain and develop models to make the recirculation of coins more economical and efficient for the society. From the social perspective, we propose a coin exchange mechanism to optimize coin inventory and to minimize the societal cost of supplying coins nationwide.

- 051-0136** Outpatient Appointment Scheduling under Patient No-Shows and Patient Heterogeneity
 Seung Jun Lee, Student, Texas A&M University College Station, United States
 Gregory Heim, Associate Professor, Texas A&M University College Station, United States
 Chelliah Sriskandarajah, Professor, Texas A&M University College Station, United States
 Yunxia Zhu, Assistant Professor, Rider University, United States

We study an outpatient appointment system that involves a patient type, a sequential booking process, no-shows, random arrivals, and different service times and procedures. We introduce several scheduling formulations that help to optimize between the patient waiting time and the idle time of surgeon.

- 051-0232** Scheduling Unit-Trains for Minimizing the Cost of Deadheading and Light Train Movements
 Manoj Vanajakumari, Assistant Professor, Texas A&M University College Station, United States
 Chelliah Sriskandarajah, Professor, Texas A&M University College Station, United States
 William Oates, Director of Locomotive Management, Union Pacific, United States

Unit-trains run between two stations which are on non-regular routes. Railroad companies face challenges in scheduling unit trains which include ensuring the availability of locomotives at the origin stations for the train movement. We solve a unit-train scheduling problem for a major North American railroad company and discuss the

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| 318 | Sunday, 02:45 PM - 04:15 PM, International 6 | <i>Track:</i> Service Operations |
| | <i>Session:</i> Servitization | |
| | <i>Chair(s):</i> Julie Paquette | |

- 051-0688** Accountability Through Life: Definitions, Concepts and Constructs
 Andy Neely, Professor, Cambridge University, United Kingdom

The shift to services poses some interesting challenges for firms, not least the transfer of risk. Particularly in outcome-based contracts, where providers guarantee performance over a long timescale, the question of how to manage accountability through life becomes central. This paper explores the concept of accountability through life.

- 051-1088** Music Production-Consumption within the Service-good Spectrum
 Silvia Carvalho, Assistant Professor, Federal University of Rio Grande do Sul, Brazil
 Annibal Scavarda, Professor, Federal University of the State of Rio de Janeiro, Brazil

Nowadays music production-consumption is very diverse. It involves possibilities including live, recorded, virtual, online, commercial, non-commercial, mass-oriented, and niche-oriented. In this context, music production-consumption behaves as a service or as a good and, for the sake of better management, ought to be understood within the service-good spectrum.

- 051-0878** Shaping Environment for Servitization: A Cluster Analysis
 Lee Namkyung, Student, Korea University, Korea, Republic of (South Korea)
 Hojung Shin, Professor, Korea University, Korea, Republic of (South Korea)
 Min Choi, Student, Arizona State University Tempe, United States
 Elliot Rabinovich, Professor, Arizona State University Tempe, United States
 Hosun Rhim, Professor, Korea University, Korea, Republic of (South Korea)

The empirical evidence of service (servitization) paradox indicates that servitization is not a panacea for manufactures. We identify four clusters of manufactures based on the criteria, such as environmental dynamism, motivation for servitization, and service attributes and compare the servitization performance differences in the four groups of manufacturers.

- 051-0166** Using Attitudinal Theory to Identify the Antecedents of Servitization
 Nikhil Varma, Student, Hec Montreal, Canada
 Julie Paquette, Assistant Professor, Hec Montreal, Canada
 Claudia Rebolledo, Associate Professor, Hec Montreal, Canada

Very few empirical researches have been done on the drivers of servitization; most research only focuses on the barriers and effects of such a strategy. We develop a model of the antecedents of servitization strategy based on attitudinal theories. Our model is tested using International Manufacturing Strategy Survey data.

319	<p>Sunday, 02:45 PM - 04:15 PM, International 7</p> <p>Session: Supply Chain Modeling and Coordination</p> <p>Chair(s): Metin Cakanyildirim</p>	<p>Track: Supply Chain Management</p>
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- 051-0062** Competitive Food Supply Chain Networks with Application to Fresh Produce
 Min Yu, Assistant Professor, University of Portland, United States
 Anna Nagurney, Professor, University of Massachusetts Amherst, United States

We develop a network-based food supply chain model under oligopolistic competition and perishability, with a focus on fresh produce. The model incorporates food deterioration through the introduction of arc multipliers, with the inclusion of the discarding costs associated with the disposal of the spoiled food products.

- 051-0679** Transshipment Prices and Purchase Costs to Coordinate Both Transshipments and Orders in Decentralized Systems
 Metin Cakanyildirim, Professor, University of Texas Dallas, United States
 Nagihan Comez Dolgan, Assistant Professor, Bilkent University, Turkey
 Kathryn Steckle, Professor, University of Texas Dallas, United States

Transshipments among independent retailers ordering from a manufacturer at the beginning of a season are studied. We prove retailer profits do not suffer from considering a transshipment only after a stockout, prices in a transshipment price interval coordinate transshipments, a cost sharing mechanism coordinates orders, and discuss transshipment price negotiation.

- 051-1059** Leveraging Divisibility in Capacity Resources in Multi-Product Manufacturing Systems with Seasonal Demands
 Sanket Bhat, Student, University of Wisconsin Madison, United States
 Ananth Krishnamurthy, Associate Professor, University of Wisconsin Madison, United States

We analyze manufacturing firms that vary production capacities and inventory levels to adapt to seasonal demands. Based on a dynamic programming model, we characterize the production and resource allocation policies and study how flexibility in resources can be leveraged to suitably adapt to seasonal demands.

- 051-0395** Manufacturing Sourcing in a Global Supply Chain: A Life Cycle Analysis
 Morris Cohen, Professor, University of Pennsylvania, United States
 Shiliang Cui, Student, University of Pennsylvania, United States

Outsourcing to low-wage countries, which has been a dominant global business strategy for many firms, is being challenged. Many manufacturing companies are "re-shoring" production to the US, while others are expanding outsourcing. We present a stochastic model of sourcing decisions that incorporates the major stages of a product's life cycle.

- 051-1441** Stochastic modeling of the last mile problem for delivery optimization
 Jay Brown, Assistant Professor, Loyola University Maryland, United States

This paper presents a stochastic representation of the last mile problem that captures stochastic demand and the cost of carbon emissions. The delivery fleet optimization model can be used in a decision framework to evaluate alternative delivery strategies as well as transportation capacity needed to meet customer demand.

320	<p>Sunday, 02:45 PM - 04:15 PM, International 8</p> <p>Session: Topics in Supply Chain Management</p> <p>Chair(s): Ziping Wang</p>	<p>Track: Supply Chain Management</p>
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- 051-0751** Supply Chain Relationships & Agent Characteristics: A Multi-Level Investigation
 Yi-Su Chen, Assistant Professor, University of Michigan Dearborn, United States
 Hung-Chung Su, Assistant Professor, University of Wisconsin Whitewater, United States
 Young Ro, Associate Professor, University of Michigan Dearborn, United States

Using scenario-based role-playing experiments, this study examines the interplay between organizational level control mechanisms and agent level characteristics among supplier and buyer. Both factors contribute to the perceptual differences between supplier's perception of buyer's behavior and buyer's own behavior when facing the same supply labor disruption event.

- 051-0599** Willingness to Pay for Green Supply Chain Management: The Impact of Moral Disengagement
 Dara Schniederjans, Assistant Professor, University of Rhode Island, United States

This study analyzes the impact of consumer attitude toward green supply chain management on willingness to pay for a green product and the moderating impact of moral disengagement. We will examine this relationship through a variety of green practices including recycling and reclamation of purchased material. A survey of consumers

- 051-1377** Cost Modelling in Supply Chain Systems
 Ifeyinwa Orji, Student, Dalian University of Technology, China

Inaccurate data on supply chain costs poses a huge challenge in supply chain systems by not portraying information on actual resource consumption and not highlighting areas for possible efficiency improvement.

- 051-1102** Consumption of Digital Piracy by Brazilian Students: Paradigms of the Music Market
 Annibal Scavarda, Professor, Federal University of the State of Rio de Janeiro, Brazil
 Cristiano Schimith, Student, University of Vale do Rio dos Sinos, Brazil
 Guilherme Vaccaro, Professor, University of Vale do Rio dos Sinos, Brazil

This research study analyses the students' profile in the music supply chain. It surveys 252 students from Southern Brazil. It also investigates the reasons that lead these young people to consume illegally music by downloading them on sites that do not pay royalties to artists.

051-0982 Made in China, America, or Elsewhere?

Ziping Wang, Assistant Professor, Morgan State University, United States

Nowadays along with the change of world economic structure and incentives from leading countries such as America, "reshoring" has gradually acquired the attention of researchers and practitioners. The impact of transfer pricing, production costs, tax rates, transportation/tariff costs, and global supply chain risk are extensively investigated in this paper.

321

Sunday, 02:45 PM - 04:15 PM, International 9

Track: Sustainable Operations

Session: Sustainable Operations with Environmental Concerns

Chair(s): Michael Lim

051-0083 Municipal Groundwater Management: Optimal Allocation and Control of a Renewable Natural Resource

Karthik Murali, Student, University of Illinois Urbana-Champaign, United States

Michael Lim, Assistant Professor, University of Illinois Urbana-Champaign, United States

Nick Petrucci, Professor, University of Illinois Urbana-Champaign, United States

We study a municipality's groundwater management problem to determine optimal allocation policies. Taking into account the features of renewability and endogenous extraction costs, we establish and characterize dynamic threshold policies for import/export and local municipal supply. Additionally, we assess the performance of these allocation rules on the basis of 3BL.

051-0560 Remanufacturing Strategies for OEMs without Remanufacturing Capabilities

Anton Ovchinnikov, Assistant Professor, University of Virginia, United States

Yu Xiong, Senior Lecturer, Chongqing University, China

Yu Zhou, Senior Lecturer, Chongqing University, China

We discuss two strategies for how an OEM without remanufacturing capabilities should interact with independent remanufacturers: outsourcing and relicensing. Factoring in the possibility of unauthorized remanufacturing and the resultant incentive compatibility concern, we discuss which strategy should be used and when. We then quantify the benefits of bringing remanufacturing in-house.

051-1208 Analysis of Energy Performance Contract in a Competitive Environment

Huang Weixiang, Student, South China University of Technology, China

Wenhui Zhou, Professor, South China University of Technology, China

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

The Energy Performance Contract (EPC) is one important mechanism to help companies reduce energy consumption. In this paper, we develop a game-theoretic model to investigate the implementation of EPC between two competing manufacturers. We find that an EPC project may or may not lead to less total energy consumption.

051-0615 Converting Overage into By-Product

Mustafa Tongarlak, Assistant Professor, Bogazici University, Turkey

Deishin Lee, Assistant Professor, Boston College, United States

Firms can often make productive use of their waste stream. In some cases, for example, profitable by-products may be created from the waste stream. We compare the profitability and social welfare of two scenarios: when the firm converts its excess product into by-product, and when it donates its excess product.

322

Sunday, 02:45 PM - 04:15 PM, International 10

Track: Humanitarian Operations and Crisis Management

Session: Collaboration, Partners and Power

Chair(s): Graham Heaslip

051-0213 Disaster Response: An Examination of Resource Management in the Early Hours

Ying Fan, Assistant Professor, University of Colorado Colorado Springs, United States

Monique French Dooley, Associate Professor, University of Colorado Colorado Springs, United States

Gary Stading, Professor, University of Houston Downtown, United States

During the initial phases of a disaster, resource management can be chaotic. Resource needs are uncertain as the scope of the disaster is unfolding. Decisions often must be made quickly with limited information to preserve life and property. This study explores key factors that create the initial chaos.

051-0445 Power in the Humanitarian Supply Chain

Graham Heaslip, Associate Professor, National University of Ireland Maynooth, Ireland

This paper analyses the changing nature of dominance/power in the supply chain, particularly in the humanitarian operations context. It follows the academic debate to show the changing use of power and changes to domination that occur depending on a number of factors. Each factor is discussed in the paper.

051-0983 A Review of Collaborative Initiatives Among Humanitarian Organizations: Challenges and Opportunities for Research

Paulo Goncalves, Associate Professor, University of Lugano, Switzerland

Mohammad Moshtari, Student, University of Lugano, Switzerland

This study reviews various types of collaborative network and dyadic initiatives in place in the humanitarian sector. We categorize the employed collaborative initiatives upon the collaboration level and the phase of humanitarian operation. Moreover, we discuss the extent to which the initiatives are employed by humanitarian organizations.

323

Sunday, 02:45 PM - 04:15 PM, International B

Track: Learning and Knowledge Management in OM

Session: Learning in Projects/Product Development

Chair(s): Anant Mishra

051-0549 Managing Shifts in Learning Orientation in the Complex Landscape of R&D Projects

Kevin Linderman, Professor, University of Minnesota, United States

Aravind Chandrasekaran, Assistant Professor, Ohio State University, United States

Fabian Sting, Assistant Professor, Rotterdam School of Management, Netherlands

R&D projects should be managed differently based on exploration and exploitation learning goals. In complex environments, R&D projects may start as an exploitation project but shift to an exploration project. This research uses NK modeling and case study analysis to understand how firms can manage these projects dynamic settings.

051-0712 The Ambidexterity Paradox: The Benefits and Perils of Exploration, Exploitation, and Learning from Failure

Jennifer Bailey, Lecturer, Babson College, United States

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

Cheryl Gaimon, Professor, Georgia Institute of Technology, United States

We empirically test our model on a sample of 13,464 patents. We find that success experience improves innovation performance. However, failure experience can lead to an "exploration failure trap". Interestingly, we demonstrate that failure experience and exploitation are both necessary, but not independently sufficient, for learning from failure to occur.

051-1047 Risk, Process Maturity, and Project Performance: An Empirical Analysis of US Federal Government IT Projects

Anant Mishra, Assistant Professor, George Mason University, United States

Sidhartha Das, Associate Professor, George Mason University, United States

James Murray, Director, Lockheed Martin, United States

Federal IT initiatives are organized in the form of large IT projects. Managing risks in such projects is a matter of serious concern for the federal government. Using longitudinal data collected from federal IT projects, we examine the role of process maturity in mitigating the performance impact of project risks.

051-0447 Knowledge Transfer in Product Development Projects

Wenli Xiao, Assistant Professor, University of San Diego, United States

Cheryl Gaimon, Professor, Georgia Institute of Technology, United States

We introduce a dynamic model to explore a manager's pursuit of a new product development project and an existing product improvement project. A key feature of our model is the characterization of the knowledge transfer process from the new product development project to the existing product improvement project.

324

Sunday, 02:45 PM - 04:15 PM, International C

Session: Supply Chain Risk Assessment

Chair(s): Jitendra Madaan

Track: Supply Chain Risk Management

051-0874 Supply Chain Risk Rating - Capturing the Big Picture

João Dias da Silva, Student, University of Porto, Portugal

Alcibiades Guedes, Professor, University of Porto, Portugal

Overall risk assessment is a key element in Supply Chain design and benchmarking. This paper proposes a generic, coherent, repeatable and primarily intrinsic methodology to aggregate and rate risk in Supply Chains, thus improving risk perception and decision making. A small case study is used to illustrate the conceptual framework.

051-1251 Risk Evaluation for Reconfigurable Manufacturing Supply Chain Using Multi Criteria Decision Making

M Reza Abdi, Assistant Professor, Bradford University, United Kingdom

This paper explores RMS potentials to deal with supply chain risks, particularly in the demand side e.g. product variety, short product life cycle, new product adoption and demand forecasting. An AHP model is proposed to prioritize risk categories and sources along with conducting semi-structured interviews with ten experts in UK.

051-0096 Customer Value Creation and Vulnerability in Multi-Actor Service Supply Network

Jukka Hemilä, Senior Scientist, Vtt Technical Research Centre of Finland, Finland

Organizations find it hard to maximize functional and emotional customer value while avoiding risks and costs. The aim of the study is to determine how functional and emotional customer value is created, and to identify vulnerabilities of it in a multi-actor service supply network.

051-1246 Flexible Decision Model for Analyzing and Prioritization of Risks in Reverse Supply Chain (RSC)

Jitendra Madaan, Assistant Professor, Indian Institute of Technology New Delhi, India

This paper proposes a flexible, generalized decision model that integrates high-level and detailed RSC design decisions and that incorporates risks. To determine the degree of consensus among the experts Kappa statistical analysis is used later these input are supplemented to hierarchical relationship using Interpretative Structural Modeling.

326	<p>Sunday, 04:30 PM - 06:00 PM, A602 <i>Track: General Track</i></p> <p><i>Session:</i> Panel: Making Professional Connections</p> <p><i>Chair(s):</i> Cheryl Gaimon</p>
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- 051-1382** Panel: Making Professional Connections
- Cheryl Gaimon, Professor, Georgia Institute of Technology, United States
 Mark Ferguson, Professor, University of South Carolina, United States
 Joy Field, Associate Professor, Boston College, United States
 Kathryn Steckle, Professor, University of Texas Dallas, United States
 Beril Toktay, Professor, Georgia Institute of Technology, United States
 Xiande Zhao, Professor, China Europe International Business School, China

Panel will discuss how to establish and sustain professional connections. We will explore the special problems encountered by an under-represented minority such as women and we will examine how cultural differences impact connections among people from different nations. Panel moderator Professor Cheryl Gaimon.

327	<p>Sunday, 04:30 PM - 06:00 PM, A701 <i>Track: Purchasing and Supply Management</i></p> <p><i>Session:</i> Sourcing strategies and practices</p> <p><i>Chair(s):</i> WC Benton</p>
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- 051-0341** Supplier Poaching in Manufacturing Outsourcing Relationships
- Keith Skowronski, Student, Ohio State University, United States
 WC Benton, Professor, Ohio State University, United States

Studies examining opportunism in exchange relationships have focused on the shirking of duties, but not on poaching, which is the use of a partner's proprietary assets outside of that relationship. Using theoretical lenses including transaction cost economics and resource dependency, we examine the antecedents to poaching in manufacturing outsourcing relationships.

- 051-0480** The Influence of Power in Professional Services Outsourcing
- WC Benton, Professor, Ohio State University, United States
 Sean Handley, Assistant Professor, University of Notre Dame, United States
 Jurriaan de Jong, Assistant Professor, Suny At Buffalo, United States

This research investigates the domain of outsourcing knowledge-based professional services. Specifically, how do differences in perceptions of interdependence between the buying organization and professional service provider moderate how the use of inter-organizational power is perceived? The implications of power exertion in different contextual settings are investigated.

- 051-0490** The Influence of Supplier Development Programs on Supplier Performance
- Carol Prahinski, Associate Professor, Michigan State University, United States
 WC Benton, Professor, Ohio State University, United States
 Ying Fan, Assistant Professor, University of Colorado Colorado Springs, United States

Supplier development programs (SDPs) are a means by which the buying firm attempts to exercise various forms of power to achieve organizational goals and to reduce the risk of opportunism within a buyer-seller relationship. Specifically, we investigate suppliers' perceptions of the buying firm's implementation of alternative SDP governance mechanisms.

- 051-1077** The Effect of Fairness on Supplier Compliance in Supply Chain Relationships
- yingchao Lan, Student, Ohio State University, United States
 WC Benton, Professor, Ohio State University, United States

In the supplier evaluation process, suppliers expect fair treatment. Thus, the perceived fairness of the evaluation process has the potential to impact their relationship quality, ultimately their performance in the exchange with buyers. We investigate the role fairness plays in the relationship development and quality in a supply chain context.

328	<p>Sunday, 04:30 PM - 06:00 PM, A702 <i>Track: Purchasing and Supply Management</i></p> <p><i>Session:</i> Modelling sourcing decisions II</p> <p><i>Chair(s):</i> Refik Gullu</p>
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- 051-0260** Power, Risk Sharing, and Moral Hazard in Scan-based Trading: An Extension of Agency Theory
- Min Choi, Student, Arizona State University Tempe, United States
 Elliot Rabinovich, Associate Professor, Arizona State University Tempe, United States

While increasingly more retailers are adopting SBT with suppliers, evidence suggests that many SBT initiatives fail to provide mutual benefits to both parties. We examine SBT through the lens of agency theory and extend it by integrating the concept of interorganizational power developed in resource dependency and social network theory.

- 051-0316** Optimal Commodity Procurement with Imperfect Delivery
- Refik Gullu, Professor, Bogazici University, Turkey
 Elif Cetin, Student, Bogazici University, Turkey

We consider a forward procurement contract with possibility of imperfect delivery amount. The spot price follows a log-normal random variable, which is allowed to be correlated with the demand and delivery quality processes. We derive the optimal contract quantity under different correlation structures and demonstrate the value of such contracts.

- 051-1187** Initial and Follow-up Ordering Decisions under Stochastic Demand and Inter-arrival Times
- Chieh Lee, Student, Washington State University Pullman, United States
 Stergios Fotopoulos, Professor, Washington State University Pullman, United States

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

We provide analytical solutions for the optimal ordering policy of a short-life-cycle product with demand that is uncertain in both quantity and inter-arrival time. The buyer is allowed to place an order before the beginning of the selling season and one reorder before the end of the selling season.

329	<p>Sunday, 04:30 PM - 06:00 PM, A703</p> <p>Session: Broad Applications of NPD</p> <p>Chair(s): Olov Isaksson</p>	Track: Product Innovation and Technology Management
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051-0109 Knowledge Spillovers in the Supply Chain: Evidence from the High Tech Sectors

Olov Isaksson, Student, Epfl, Switzerland
 Ralf Seifert, Professor, IMD, Switzerland
 Markus Simeth, Student, Epfl, Switzerland

This paper explores knowledge spillovers in the supply chain. By building on the organizational learning literature we discuss how knowledge is diffused in the supply chain. We show that innovative output at the buyers positively influences innovative output at the supplier and that relationship duration and tie-strength moderate this effect.

051-0337 Living Lab: A Proposal for a Collaborative Network for Open Innovation between University and High School

Angela Sakamoto, Professor, Centro Universitário Luterano de Palmas, Brazil
 Wanderley Souza Jr., Student, Centro Universitário Luterano de Palmas, Brazil

The Living Lab model and the concepts of BPM and OM were used as reference for designing a collaborative network between college and high school. The focus is to help spread scientific thinking and knowledge building through ICT, innovating the relationship among students and teachers, broadening ideas and shortening distances.

051-1016 Financialization and Business Strategy: The Need for Bridging Efforts

Jonas Maia, Student, Fundacao Getulio Vargas, Brazil
 Luiz Di Serio, Professor, Fundacao Getulio Vargas, Brazil

Paper conducts bibliometric analysis on impacts of financialization on business strategy. Results suggest efforts are needed to bridge concepts: (1) search in Web of Science of both terms returned 2 results; (2) search of "financialization" with term-grouping (VOSViewer) indicated lack of strategy concepts among frequent terms, which focus on macroeconomic issues.

330	<p>Sunday, 04:30 PM - 06:00 PM, A704</p> <p>Session: Effective Management of Supply Chains</p> <p>Chair(s): Suvrat Dhanorkar</p>	Track: Empirical Research in Operations Management
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051-0895 Shocks, Nudges and Timing Effects: A Change Intervention Lens for Environmental Improvements

Suvrat Dhanorkar, Student, University of Minnesota, United States
 Kevin Linderman, Professor, University of Minnesota, United States
 Enno Siemsen, Associate Professor, University of Minnesota, United States

We conduct an event history analysis of Environmental Improvements (EIs) tracked over several months. From a 'policy' perspective we show that existing regulatory actions are often counterproductive to support-based environmental interventions. From an 'operational' perspective, we show that non-regulatory actions and managerial ownership can ensure faster adoption of EIs.

051-1087 The Effect of Business Cycle and Industrial Structure on Occupational Injury Pattern

Dong-Shang Chang, Professor, National Central University, Taiwan, Republic of China
 Yen-Chen Tsai, Student, National Central University, Taiwan, Republic of China

This study is to explore the change of occupational injury pattern from long-term and macro perspective. How business cycle and industrial structure affect the occupational injury pattern was elucidated. The correspondence analysis is applied to examine changes in occupational injury patterns based on 78697 cases reported by manufacturers in Taiwan.

051-0661 Impact of Manufacturing Practices on Performance: A Meta-Analytical Structural Equation Modelling Approach

Nick Ziengs, Student, University of Groningen, Netherlands
 Jan Riezebos, Associate Professor, University of Groningen, Netherlands
 Dirk Pieter Van Donk, Professor, University of Groningen, Netherlands

Over two decades of research on manufacturing practices has resulted in inconsistent findings on how these practice relate to one another. To reconcile these inconsistencies, we use a combination of meta-analytical and structural equation modelling techniques to synthesize data of roughly twenty thousand firms reported in over a hundred studies.

051-0370 Relationship Strength, Supply Network Structure, and Firm Performance: An Empirical Investigation

Marcus Bellamy, Student, Georgia Institute of Technology, United States
 Soumen Ghosh, Professor, Georgia Institute of Technology, United States
 Manpreet Hora, Assistant Professor, Georgia Institute of Technology, United States

We investigate the association between relationship strength, supply network structure, and firm performance. We use empirical methods to analyze relationship and financial data for firms in automotive, drug, and electronics industries. Multilevel mixed-effects and social network analysis are used to incorporate insight at the firm, dyad, and network level.

331	<p>Sunday, 04:30 PM - 06:00 PM, A705</p> <p>Session: Data-driven Analysis of Healthcare Operations</p> <p>Chair(s): Dimitrios Andritsos</p>	Track: Healthcare Operations Management
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051-0351 Managing Tele-ICUs: A Service Factory for the Critically Ill

Michael Fry, Associate Professor, University of Cincinnati, United States

Muer Yang, Assistant Professor, University of St. Thomas, United States
Corey Scurlock, National Medical Director, Advanced ICU Care, United States

Tele-intensive-care units use advanced communication systems to remotely provide clinical care to ICUs in various locations. Working with a large tele-ICU service provider that manages dozens of hospitals' ICUs across the country, we develop simulation and optimization models to improve service levels and to reduce costs at the tele-ICU.

051-0400 Effect of Readmission Rates on Marginal Cost in Hospital Services: An Econometric Analysis

Sriram Venkataraman, Assistant Professor, University of South Carolina, United States
Aleda Roth, Professor, Clemson University, United States
Daniel Miller, Assistant Professor, Clemson University, United States
Lawrence Fredendall, Professor, Clemson University, United States

This research empirically investigates the effect of readmission rates on marginal hospital costs. Using aggregate level data from 169 Arizona hospitals, we estimate their marginal costs using structural estimation techniques from empirical IO. Our empirical results demonstrate that marginal hospital costs do indeed increase significantly with increases in readmission rates.

051-0463 Linking Process Quality and Resource Usage: An Empirical Analysis

Dimitrios Andritsos, Assistant Professor, Hec Paris, France
Christopher Tang, Professor, University of California Los Angeles, United States

In the context of cardiac care we examine whether increased adherence to evidence-based medical guidelines is associated with reduced patient resource usage. We find that this is true for clinical guidelines and show that this effect is more pronounced in less focused environments.

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Sunday, 04:30 PM - 06:00 PM, A706

Track: Healthcare Operations Management

Session: Medical Decision Making

Chair(s): Mariel Lavieri Turgay Ayer

051-0308 The Role of Patient Preferences in Managing Post-Mammography Diagnostic Decisions in Breast Cancer

Mehmet Ayvaci, Assistant Professor, University of Texas Dallas, United States
Oguzhan Alagoz, Associate Professor, University of Wisconsin Madison, United States
Elizabeth Burnside, Associate Professor, University of Wisconsin Madison, United States

We investigate the role of risk preferences in the context of breast cancer diagnostic decisions following mammography through developing a risk-sensitive finite-horizon MDP model. We provide medical/policy insights through empirical validation of our model and demonstrate that the current medical practice of breast biopsies resemble risk-seeking behavior.

051-1155 Physician Learning Processes

Vishal Ahuja, Student, University of Chicago, United States
John Birge, Professor, University of Chicago, United States

Effective medical decision making depends on the ability of health care providers to learn effective treatments from their own experience, that of other providers in their organization, and from publications. Using data from the VA health system, we identify these effects and others in diabetes treatment.

051-1165 An Integrated Framework to Model the Trajectories of Chronic Conditions

Adel Alaeddini, Assistant Professor, University of Texas San Antonio, United States

Nearly 75 million people in the US have one or more chronic conditions. While some patients display a stable trajectory over time, others display a trajectory of deterioration. The main objective of this research is to identify trajectories among patients with chronic conditions at baseline and describe patterns of trajectories.

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Sunday, 04:30 PM - 06:00 PM, A707

Track: Product Innovation and Technology Management

Session: Network Effects in Innovation

Chair(s): Edward Anderson

051-0415 Product-Service Networks in the Mobile Ecosystem

Hyunwoo Park, Student, Georgia Institute of Technology, United States
Rahul Basole, Associate Professor, Georgia Institute of Technology, United States

Using a visual network approach, this study examines the transformation of the product-service network in the mobile ecosystem for three distinct product categories: basic phones, smartphones, and tablets. Our findings show a shift towards an increasingly platform-centric network. We discuss results through the lens of enterprise transformation and organization theory.

051-0608 Supply Network Emergence Models and the Development of Nascent and Emerging Industries

Tomás Harrington, Associate Professor, Cambridge University, United Kingdom
Jagjit Singh Srail, Cambridge University, United Kingdom

The research aims to develop supply network emergence models through determining appropriate industrial system and supply network configurations, recognized as an essential component in the development of emerging Industries. Methods evaluate changes to existing and emerging industrial structures, focusing on alternative product-process route combinations for the manufacture of terpene-based intermediates.

051-0619 Platform Investment in the Presence of Network Externalities

Edward Anderson, Associate Professor, University of Texas Austin, United States
Geoffrey Parker, Professor, Tulane University, United States
Burcu Erciyes, Assistant Professor, Tulane University, United States

We examine the development of product platforms in markets that exhibit two-sided network externalities. We examine the trade-offs firms must make between investing new product development resources to increase platform performance, and investing these resources to leverage the platform's cross-network externalities between content developers and customers.

051-0745 The Importance and Antecedents of Firm Commitment in Innovation-driven Networks

Moronke Idiagbon-Oke, Associate Professor, Grand Canyon University, United States
Adegoke Oke, Associate Professor, Arizona State University Tempe, United States

Firm commitment is key in innovation-driven network of firms. It influences the performance of an NPD project. Our research reveals that commitment in such contexts depends on several factors including the level of interdependency between network members, motivations for participating in the project and members' influence on network goals.

334 Sunday, 04:30 PM - 06:00 PM, A708

Track: Production Planning and Scheduling

Session: Production scheduling

Chair(s): Carlos Ernani Fries

051-0959 A Mixed-Integer Model for Master Production Schedule (MPS) for the Plastic Injection Industry

Carlos Ernani Fries, Associate Professor, Federal University of Santa Catarina, Brazil
Bruno Santos Vieira, Student, Federal University of Santa Catarina, Brazil

Persistent price and margin pressure require strong efforts to maximize throughput and minimize variability in the plastic industry. A MPS model for a Brazilian midsize manufacturer considering perishability, warehouse size, machine-mold-product relationships and machine parallelism is presented. Results show that inventory and outsourcing can be significantly reduced with its application.

051-0748 The Variability in Dynamic Work-sharing under Balanced and Imbalanced Unshared Work

Salah Kasmoo, Student, Tokyo Institute of Technology, Japan
Takao Enkawa, Professor, Tokyo Institute of Technology, Japan
Sadami Suzuki, Associate Professor, Tokyo Institute of Technology, Japan

An investigation of the variability effect on a serial production line under dynamic work-sharing is done. Several unshared workload configurations are employed. The results provide insights to improve the efficiency of work-sharing by managing the variability and demonstrate the interaction between variability and unshared work.

051-1171 Sequencing in Process Manufacturing - The Product Wheel Approach

Shellyanne Wilson, Assistant Professor, The University of Trinidad and Tobago, Trinidad and Tobago

Sequencing is perhaps the single most important production planning routine for mix flexibility achievement on a shared manufacturing resource. However, unlike discrete manufacturing, there are limited prescribed techniques for sequencing routines in process manufacturing. This paper explores sequencing via the product wheel technique through its application in two case studies.

051-0920 Estimating Capacity Requirements in a Flow-shop Facility that Minimize Makespan

Carlos Ernani Fries, Associate Professor, Federal University of Santa Catarina, Brazil
Bruno de Souza Alves, Student, Federal University of Santa Catarina, Brazil

Master Production Schedule considers only capacity availability on a high aggregation level. This paper deals with the estimation of capacity requirements in a flow-shop manufacturing when considering the minimization of makespan. Simulations show that lower bounds analyses can lead to robust estimations, independent of product mix and lot size.

336 Sunday, 04:30 PM - 06:00 PM, M101

Track: Information Systems

Session: Economics of Information Systems - II

Chair(s): Tunay Tunca Hyoduk Shin

051-0222 Dynamic Pricing of Enterprise Software with Value Uncertainty: Implication for Selling Software as a Service

Mingdi Xin, Assistant Professor, University of California Irvine, United States

This paper studies a software vendor's decision to offer perpetual or lease-based licensing when customers are uncertain about their valuation for the software prior to adoption, and adoption requires an upfront implementation cost. The findings explain the predominance of perpetual licensing and the variation in SaaS adoption across software markets.

051-0393 Information Sharing in a Supply Chain with a Trade Association under a Wholesale Price Contract

Noam Shamir, Assistant Professor, Tel Aviv University, Israel
Hyoduk Shin, Assistant Professor, University of California San Diego, United States

Studying the incentives of a group of retailers, organized as a trade association, to exchange forecast information, we compare between two industry policies: exclusionary and non-exclusionary information sharing. Although non-exclusionary policy has been advocated to promote information sharing, we show the opposite can happen and explain the reason.

051-0472 License or Subscription? Pricing Information Goods with Value Depreciation and Network Effects

Yifan Dou, Assistant Professor, Beihang University, China
Yu Jeffrey Hu, Associate Professor, Georgia Institute of Technology, United States
D.J. Wu, Associate Professor, Georgia Institute of Technology, United States

Should a monopolistic vendor adopt the license model ("perpetual licensing or selling") or the subscription model ("subscription-based pricing or leasing") for information goods or services? We re-visit this decades-long debate in the context of value depreciation and network effects, using a two-period game-theoretic model.

051-0881 Sharing Behaviors in Online P2P Barter Markets: An Empirical Investigation

Shun Ye, Assistant Professor, George Mason University, United States
Il-Horn Hann, Associate Professor, University of Maryland, United States
Siva Viswanathan, Associate Professor, University of Maryland, United States

With the rapid rise of the sharing-economy, there is increased interest in understanding the drivers of individual sharing behaviors. In one of the first systematic studies of online peer-to-peer barter markets, we examine how individuals decide whom to share with when facing multiple alternatives, and the outcomes of their choices.

337	Sunday, 04:30 PM - 06:00 PM, M102	<i>Track:</i> Inventory Management
	<i>Session:</i> Inventory Models with Consumer Behavior	
	<i>Chair(s):</i> Shailesh Kulkarni	

051-1391 Financial Risks and Inventory Policy: A Newsvendor Problem With Random Capacity

Bo Li, Student, Texas A&M University College Station, United States
Antonio Arreola-Risa, Associate Professor, Texas A&M University College Station, United States

We examine the ordering decision of a newsvendor firm with random capacity using the Capital Asset Pricing Model. We characterize the optimal ordering decision and assess the effect of random capacity on the optimal ordering decision, with and without correlation of random capacity and market return.

051-0152 Optimal Ordering Decisions Under Various Returns Policies

Shailesh Kulkarni, Associate Professor, University of North Texas, United States
Subramaniam Ponnaiyan, Student, University of North Texas, United States
Hakan Tarakci, Assistant Professor, University of North Texas, United States

The purpose of this study is to minimize the cost of excess stocking without compromising product availability. To achieve these conflicting objectives, our study includes two ordering instances and two returns policies: returns on the first order size and returns on the entire purchase quantity.

051-0934 Collection Control with Customer Choice Behavior for Rental Companies

Marco Bijvank, Assistant Professor, Rotterdam School of Management, Netherlands
Iris Vis, Professor, University of Groningen, Netherlands
Jaap Boter, Professor, Vrije Universiteit Amsterdam, Netherlands

We study the behavior of customers in case of a stock out in a setting with public libraries. In particular, we model the setting as a continuous review inventory system with base-stock levels and emergency lateral transshipments. A case study demonstrates the performance of our heuristic procedure to analyze library collections.

051-0714 Inventory Management Decisions in a Customer Switching Environment

Heidi Celebi, Student, University of Maryland, United States
Philip Evers, Associate Professor, University of Maryland, United States

How is performance (fill rate) affected by inventory management decisions of two substitutable products? Decisions of inventory review policy and target service level are simulated over varying conditions of product demand and degree of substitutability. Substitution takes place whenever a customer switches from one product to another due to stockout.

338	Sunday, 04:30 PM - 06:00 PM, M103	<i>Track:</i> Manufacturing Operations
	<i>Session:</i> Capacity Planning	
	<i>Chair(s):</i> Martin Land	

051-0836 Buffer Analysis: A Framework for Decomposition

Martin Land, Associate Professor, University of Groningen, Netherlands
Matthias Thurer, Student, Universidade Federal De São Carlos, Brazil
Mark Stevenson, Senior Lecturer, Lancaster University, United Kingdom
Lawrence Fredendall, Professor, Clemson University, United States

Early literature already concluded that variability requires buffering by either inventory, time or capacity. This study develops a framework for further classification and decomposition of these buffers. The framework enables the causes of excessive buffers to be diagnosed effectively and reduced.

051-0376 Additive manufacturing: Towards a New Operations Management Paradigm?

Mattia Bianchi, Assistant Professor, Stockholm School of Economics, Sweden
Pär Ahlström, Professor, Stockholm School of Economics, Sweden

To amount to a new industrial revolution, the technological changes brought by additive manufacturing must go side by side with new operations management practices. What will these practices be, that fully reap the gains from additive manufacturing? The case study of a firm adopting this technology offers some preliminary answers.

051-0822 A Resource Planning Method for Modular Assembly Line Based on Coordination in Career Apparel Industry

Jianhua Yang, Professor, Dongling School of Economics and Management, University of Science and Technology, China
Shugang Ma, Lecturer, Hebei University of Economics and business, China
Rui Peng, Assistant Professor, Dongling School of Economics and Management, University of Science and Technology, China

In order to increase flexibility and decrease cost in a mass production line of career apparel to meet the needs of multi-variety and small-batch orders, this paper presents a resource planning optional method and its algorithm for career apparel industry based on coordination among modules.

339	Sunday, 04:30 PM - 06:00 PM, M104	<i>Track:</i> Supply Chain Management
	<i>Session:</i> Agricultural and Sustainable Supply Chains	
	<i>Chair(s):</i> Xia Bei	

051-1228 Research on the Model of Agricultural Supply Chain Based on Internet of Things

Xia Bei, Student, YangZhou university, China

This paper firstly analyzes some issues of the traditional agricultural supply chain. We then examine how to use the Internet of things to solve these issues and propose a new model of agricultural supply chain. Lastly, we use empirical research to illustrate this model and gain more insights.

051-0600 Does Ethics Play a Role in Adoption of Green Supply Chain Management? An Empirical Investigation

Dara Schniederjans, Assistant Professor, University of Rhode Island, United States

Previous research alludes to a variety of factors impacting an organizations use of green supply chain management practices. These factors have been described as coercive, normative and mimetic pressures based on institution theory. In this study we assess the moderating impact of moral disengagement and sensitivity on adoption.

- 051-0663** Practices of Sustainability in Supply Chains: Experiences in South America
 Juliano Gerber, Assistant Professor, Universidade Estadual de Santa Cruz, Brazil
 Francisco Freires, Associate Professor, Universidade Federal da Bahia, Brazil
 Martin Tanco, Associate Professor, Universidad De Montevideo, Uruguay
 Luane Nunes, Student, Universidade Estadual de Santa Cruz, Brazil

The aim of this paper is to explore sustainable practices in south American supply chains. Experiences, such as in dairy sector, in Brazil and Uruguay will be explored. The research has a qualitative approach and results of a joint research between three universities in Brazil and Uruguay.

- 051-1117** The Perishable Supply Chain Management: The Clients' Expectation Factors at the Chicken Supply Chain
 Annibal Scavarda, Professor, Federal University of the State of Rio de Janeiro, Brazil
 Gustavo Schiavo, Student, University of Vale do Rio dos Sinos, Brazil
 André Korzenowski, Assistant Professor, University of Vale do Rio dos Sinos, Brazil

This research develops a model for the implementation of the perishable supply chain management based on the clients' expectation factors of the products. This study analyzes in special the processes of the chicken supply chain.

340	<p>Sunday, 04:30 PM - 06:00 PM, M106 <i>Track: Sustainable Operations</i></p> <p><i>Session:</i> Green Transportation and Logistics</p> <p><i>Chair(s):</i> Jun Lv</p>
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- 051-0591** Pareto Optimization for Adoption and Routing of a Green Vehicle in Mixed Fleet
 Mesut Yavuz, Associate Professor, Shenandoah University, United States
 Ismail Capar, Assistant Professor, Texas A&M University College Station, United States

We present a mixed fleet green vehicle routing problem, in which a decision maker considers carbon emission and cost saving opportunities through alternative-fuel-vehicle (AFV) adoption. We develop a Pareto optimization approach to determine the efficient frontier and also a sensitivity analysis thereof to evaluate the overall impact of the AFV.

- 051-0440** Sustainable Smart Cities: European Initiatives of Freight Urban Distribution
 Ramón García, Projects and Innovation management, European Logistic Association and Centro Español de Logística, Spain
 María Álvarez Gil, Professor, Universidad Carlos III de Madrid, Spain, Spain

Freight Urban Distribution is experiencing a radical change in Europe although the implementation pace is not fast and furious. This paper provides some examples of the different pilot experiments taking place across the continent, leaded by the Europe 2020 initiative and followed by private logistic companies and all size municipalities.

- 051-1368** An Exact Algorithm for the Pollution Routing Problem
 Said Dabia, Assistant Professor, Eindhoven University of Technology, Netherlands

We propose an exact algorithm for The pollution routing problem based on a set partitioning formulation. We determine the set of routes that minimizes the vehicles fuel consumption and driving time. To do so, we decide on the vehicles dispatch time at the depot and speed on each arc.

- 051-1320** The Value of Carbon Footprint Information into Supply Chain Management : The Case Study of Freight Transport
 Gisele Mendy Bilek, Assistant Professor, University of Pau & Pays de l'Adour, France
 Arnaud Bilek, Consultant, CONSOPTIMA, France

The aim of this study is to identify the detailed information of carbon emissions from freight transport and understand the impact into supply chain management. The case study approach is employed and will give us some insights in the measurement of the value of carbon footprint information in transport sourcing.

- 051-1439** Prediction of Returns in WEEE Reverse Logistics based on Spatial Correlation
 Jun Lv, Associate Professor, I AM WORKING IN BUSINESS SCHOOL OF ECNU, China
 Jiaping Xie, Professor, Shanghai University of Finance and Economics, China

Under the stress of environment legislation and resource lack, logistics management turns from linear mode into closed mode. It is difficult for academic circle and industry to predict the returns of recycling WEEE products due to the uncertainty of the number of returns. From a new perspective, we consider spatial correlation of returned WEEE, introduce Kriging method of spatial statistics and build Kriging spatial model of reverse logistics return prediction. Four main properties about the return volume of recycle centers are found. Simulation experiments based on Monte Carlo are conducted to validate the effectiveness of the developed model.

343	<p>Sunday, 04:30 PM - 06:00 PM, International 4 <i>Track: Behavior in Operations Management</i></p> <p><i>Session:</i> BOM with Organization Perspectives</p> <p><i>Chair(s):</i> Michael Needham</p>
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- 051-0519** A Case Study of Continuous Improvement as a Dynamic Learning Capability
 Michael Needham, Lecturer, University of Ulster, United Kingdom

The ability to consistently improve current processes and learn new ones is termed continuous improvement capability. A framework model is presented as based on the findings of a case study of process improvement within a firm. The results show that the key tacit elements are mediated by behavioural factors.

- 051-0594** The Influence of Uncertainty Avoidance in BSRs
 Luis Campos, Supply General Manager - Services, Votorantim, Brazil
 Janaina Siegler, Student, Fundacao Getulio Vargas, Brazil
 Aline Fernandes, Student, Fundacao Getulio Vargas, Brazil

Many different researches have shown that cultural dimensions differ among countries. This may influence the way B2B relationships evolve, even within the same corporate culture. Collecting data from a global company, this paper argues: how uncertainty avoidance can influence buyer-supplier relationships development and maintenance in Brazil, U.S.A., Colombia, and Peru?

051-0723 EBX Bankruptcy: The Irrationalities and Operations Implications

Cristiane Biazzin, Student, Fundacao Getulio Vargas, Brazil
Janaina Siegler, Student, Fundacao Getulio Vargas, Brazil
Jalba Miniussi, Student, Fundacao Getulio Vargas, Brazil

Using EBX history and bankruptcy process in a short period of time, we analyze the international scandal that impacted Brazilian economy and society recently. Secondary data published in media and literature of behavioral operations and project management were used to provide a case study with operations implications.

051-0966 Strength and Fragile Aspects of Innovation Implementation

Silvana Pereira, Professor, Fundacao Getulio Vargas, Brazil
Jeovan Figueiredo, Professor, Universidade Federal de Mato Grosso do Sul (UFMS), Brazil
Luiz Di Serio, Professor, Fundacao Getulio Vargas, Brazil

This study aims to understand the Innovation process in organizations. With case study, it could be observed that the innovation's implementation goes through a mimetic process. However, once implemented, there is a disconnection between the initial purpose and its results, translated in routines through which the effort loses strength.

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Sunday, 04:30 PM - 06:00 PM, International 5

Track: Service Operations

Session: Infrastructure and Utilities

Chair(s): Henk Akkermans

051-0832 Ramp-ups in IT Enabled Service Supply Chains

Roeland van Oers, Student, Tilburg University, Netherlands
Henk Akkermans, Professor, Tilburg University, Netherlands
Chris Voss, Emeritus Professor, University of Warwick, United Kingdom

In IT-enabled service supply chains volume ramp-ups are notoriously difficult. We present three longitudinal case studies of ramp-ups in service supply chains at European telco, triangulated with a system dynamics simulation model. and present (1) typical dysfunctional ramp-up behavioral dynamics, (2) root causes for these and (3) improved management policies

051-0259 What Matters in Intermodal Service Operations from the Shipper's Point of View?

Ricardo Martins, Professor, Federal University of Minas Gerais, Brazil
Debora Lobo, Associate Professor, State University of Western Paraná (Unioeste), Brazil
Alexandre Alves, Professor, State University of Maringa (UEM), Brazil
Renato Sproesser, Professor, Federal University of Mato Grosso do Sul, Brazil

This study investigated the service desired by shippers in operating intermodal terminals. Applying the Stated Preference Technique, shippers indicated the ranked constructs as follows: reliability, time period, customer relations, cost, and flexibility. The results indicate that constructs associated with the quality of service are receiving higher valuation than freight rate.

051-0865 Optimizing Antennae Location in Rural Areas for a Telecom Operator in India

Harsha Gadi, Student, Indian Institute of Management Bangalore, India
Rajluxmi Murthy, Associate Professor, Indian Institute of Management Bangalore, India
Vishnuprasad Nagadevara, Professor, Indian Institute of Management Bangalore, India
Ravi Shankar, Additional General Manager, Indian Institute of Management Bangalore, India

Antennae Placement Problem for a Telecom Operator in India is modelled as a Discrete Facility Location Problem and a methodology to deal with conflicting network design objectives is proposed. Our results indicate potential savings of 26% (around 1 Billion INR in one of the states) in Infrastructure costs.

051-1328 Electricity Distribution Efficiency with Energy Loss as Undesirable Output: The Case of Philippines

Trishit Bandyopadhyay, Professor, Xavier Labor Relations Institute, India
Fernando Roxas, Associate Professor, Asian Institute of Management, Philippines

The efficiency of electric distribution units in the Philippines is analysed, where energy-loss is treated as "bad output". A directional distance DEA approach is adopted. Pure, technical, scale and output congestion inefficiency are derived and trade off analysis along with second stage regression performed to focus on areas of improvement.

051-0612 Capital Allocation for Operational Risk Management in Financial Institutions

Yuqian Xu, Student, New York University, United States
Jawei Zhang, Associate Professor, New York University, United States
Michael Pinedo, Professor, New York University, United States

We study the optimal capital allocation strategies for financial institutions to mitigate expected operational losses due to operational risk events and how investment strategies behave under different scenarios. We hope to provide some explicit guidelines for banking operational risk regulation.

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Sunday, 04:30 PM - 06:00 PM, International 6

Track: Service Operations

Session: Service Recovery and Service Networks

Chair(s): Ben Scott

051-0247 Study of Online Service Recovery Quality's Impacts on eWOM

Jin Qin, Associate Professor, University of Science and Technology of China, China
Fanfan Yang, Student, University of Science and Technology of China, China

This study explores the impact of online retail service recovery quality on customers' eWOM. A relationship model between online service recovery quality (including contact, responsiveness and compensation), customers' satisfaction of service recovery (SSR), customer value and eWOM is proposed and tested using structural equation modeling method with survey data.

051-0573 The Effects of E-Service Recovery Process on Perceived Justice, Satisfaction, and Repatronage

Siti Zakiah Abu Bakar, Student, Southern Illinois University Carbondale, United States

John Goodale, Associate Professor, Southern Illinois University Carbondale, United States

This study explores the effects of e-service recovery processes in mitigating the negative impact of failure on perceived justice, satisfaction and repatronage intention. E-service delivery and recovery is a unique service environment, and we examine the impact of common dimensions of recovery operations on customers.

051-0950 New Opportunities for Shared Services through Operations Management

Jaime Oliveira, Student, Fundacao Getulio Vargas, Brazil

Antonio Vasconcelos Neto, Student, Fundacao Getulio Vargas, Brazil

Marcelo Bradaschia, Student, Fundacao Getulio Vargas, Brazil

The largest Brazilian company (Petrobras) achieved greater efficiency, quality, reliability and a reduction of 74% in operating costs with property security. Grounded on Resources Based View and Transaction Cost Theory, through action research, researchers and technicians expanded shared services model's perspective with the combination of technological and management new tools.

051-0310 Building the Dream Team: Strategic Restructuring in the Canadian Interuniversity Sport League

Eric Galbraith, Student, Mount Royal University, Canada

Ben Scott, Student, Mount Royal University, Canada

Kalinga Jagoda, Associate Professor, Mount Royal University, Canada

This paper presents an integrated model that will enable institutions and athletic departments to create an athletic program that will gain acceptance at the highest level of collegiate competition. The application of this model strives to accumulate fundamental elements to enhance expectations of success in an effort to gain recognition.

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Sunday, 04:30 PM - 06:00 PM, International 7

Session: Supply Chain Management Modeling

Chair(s): Dincer Konur

Track: Supply Chain Management

051-0656 Cost Stability In Continuous Review Inventory Systems

Dincer Konur, Assistant Professor, Missouri University of Science And Technology, United States

We revisit continuous review inventory model with an additional objective of stabilizing the cost changes that can be observed due to random demand. A bi-objective optimization problem is formulated and a method is proposed to generate the Pareto Front. Numerical studies are conducted to illustrate how costs can be stabilized.

051-1221 Pricing Decision in Supply Chain of Complementary Products with Price-Sensitive Demand

lingzhi shao, Student, Southeast University, China

Sijie Li, Associate Professor, Southeast University, China

We consider a supply chain with one retailer and two suppliers, in which the perfectly complementary products are sold to strategic consumers, each supplier chooses her production quantity and selling price. We investigate the optimal decisions and performance of supply chain under independent and joint pricing with price-sensitive demand.

051-0100 Evaluation of the Use of Lean Manufacturing Tools in a Supply Chain of the Brazilian Pharmaceutical Industry

Marcio Ferreira, Student, UNINOVE, Brazil

Rosangela Vanalle, Professor, Universidade Nove De Julho, Brazil

José Salles, Professor, Universidade Nove De Julho, Brazil

This article aims to evaluate the use of lean manufacturing practices, according to SAE J4000, in a supply chain of the pharmaceutical industry. The data were collected in four companies: a manufacturer, a distributor and two suppliers. The results show companies are aligned in only one of the six elements of the standard

051-1053 The Evolution of the Theory of Lean Supply Chain Management

Cristiane Anacleto, Student, Universidade Federal De Santa Catarina, Brazil

Carlos Rodriguez, Associate Professor, Universidade Federal De Santa Catarina, Brazil

Edson Paladini, Associate Professor, Universidade Federal De Santa Catarina, Brazil

This paper analyzed the evolution of academic research on international management of lean supply chain between 1995 and 2010. We conclude that the issue is still little addressed in the scientific community e other findings.

051-1000 Root Cause Analysis Method, Used to Investigate Job Accidents as a Logistics Strategy

Roberto Cervi, Professor, Catholic University of Brazil, Brazil

Cicero Marques, Professor, Catholic University of Brazil, Brazil

This study tries to discuss and compare the experience of a multinational company that applies the accident investigation methodology through the Root Cause Analysis (RCA) and the theory presented by Binder, Almeida and Monteau. The intention is to apply the analysis and investigation methodology fundamentals of job accidents.

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Sunday, 04:30 PM - 06:00 PM, International 8

Session: Supply Chain Sourcing

Chair(s): Yi-Su Chen

Track: Supply Chain Management

051-0722 Differences in Perspectives between Supplier and Buyer on Supplier Disruption Events

Hung-Chung Su, Assistant Professor, University of Wisconsin Whitewater, United States

Yi-Su Chen, Assistant Professor, University of Michigan Dearborn, United States

Young Ro, Associate Professor, University of Michigan Dearborn, United States

Using scenario-based role-playing experiments, this study attempts to understand the differences between supplier's perception of buyer's behavior and buyer's own behavior when facing the same supply disruption event. The preliminary results show that suppliers are generally over optimistic and buyer's are more sensitive to relational norm than suppliers think.

051-0749 Applicability of Sourcing on Product Development: A Case Study in Agricultural Sector

Renato Monaro, Assistant Professor, FAJ - Faculdade de Jaguariúna, Brazil

Joao Domingues Jr., Intern, General Electric, Brazil

Victor Jamarino, Buyer, JF Maquinas Agricolas, Brazil

Marcos Andrade, Engineer, JF Maquinas Agricolas, Brazil

This paper aims to demonstrate through a case study in agricultural sector that the supplier development, also known as sourcing, has a direct influence on the product development success and has been affecting qualitative and quantitatively on the final outcome of the product.

051-0563 Interaction Between Buyer-Supplier and the Capability Development Process

Camila Kolosowski, Student, Centro Universitario Da Fei, Brazil

Gabriela Scur, Professor, Centro Universitario Da Fei, Brazil

In order to be more competitive firms have been increasing the outsourcing of production. The aim of this paper is to analyse the interaction between customers and suppliers of the Brazilian apparel industry and to verify how the relationships can contribute to the development of the capacities in the suppliers.

051-0354 Modeling of Sustainable Supplier Selection in an Emerging Economy: A Case Study

Ifeyinwa Orji, Student, Dalian University of Technology, China

Sun Wei, Professor, Dalian University of Technology, China

Ding Xin, Student, Dalian University of Technology, China

Although many publications exist on supplier selection, studies have concentrated on developed economies while scarcely incorporating sustainability. This work developed an integrated FUZZY-DEMATEL and TOPSIS model for supplier selection with sustainability considerations in a gear manufacturing company of emerging economy. The performance indices of seven supplier alternatives were computed and best supplier selected.

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Sunday, 04:30 PM - 06:00 PM, International 9

Track: Sustainable Operations

Session: Sustainable Operations in Food & Energy Markets

Chair(s): Daniel Hach

051-0283 Capacity Market Design Options - A Quantitative Assessment Including a GB Case Study

Daniel Hach, Student, WHU - Otto Beisheim School of Management, Germany

Stefan Spinler, Professor, WHU - Otto Beisheim School of Management, Germany

Chi Kong Chyong, Assistant Professor, Cambridge University, United Kingdom

Capacity markets are currently discussed in several countries worldwide - e.g. the U.K. and Texas. We assess the effect of different design options on the electricity market. Using a long term electricity capacity investment model we compare the impact of these design options regarding cost, supply adequacy, and generation mix.

051-1139 Reliability of Special Synchronous Air Generators

Waltson Limad, Associate Professor, CEETEPS - Centro Estadual de Educação Tecnológica Paula Souza, Brazil

Maria Lúcia Da Silva, Professor, Escola Politécnica da Universidade de São Paulo, Brazil

Leonardo Barros, Quality Engineering Coordinator, Universidade Federal de Pernambuco, Brazil

Discussions about energy sources, especially from wind power, have provoked needs of reliability analysis of special synchronous hexaphase multipolar generators. The studies are based on: improvements of availability operation, failure mode predictability, safety and efficiency measurement. Preliminary results show importance of use quantitative techniques (prognosis) to assure reliability of product.

051-1151 The Dairy Agribusiness in a Sustainable Perspective

Juliano Gerber, Assistant Professor, Universidade Estadual de Santa Cruz, Brazil

Francisco Freires, Associate Professor, Universidade Federal da Bahia, Brazil

Martin Tanco, Professor, Universidad De Montevideo, Uruguay

Luane Nunes, Student, Universidade Estadual de Santa Cruz, Brazil

The purpose of this paper is to conduct a study about the disposal of dairy production in Brazil with emphasis on whey. We suggest that the treatment of these residues can be performed through reverse logistics. It will be designed and proposed a reverse logistics system.

051-0200 Wineries in Northeast of Brazil: A Sustainable Business?

Natália Souza, Student, Federal University of Pernambuco, Brazil

Carla Gómez, Professor, Federal University of Pernambuco, Brazil

In the middle of one of the poorest, driest regions of Brazil blooms a highly competitive agribusiness. Despite the economic prosperity generated from the winery industry, environmental and social problems arise in Sao Francisco Valley. Our objective is to discuss the sustainability of wineries according to the Business Sustainability Grid(2010).

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Sunday, 04:30 PM - 06:00 PM, International 10

Track: Humanitarian Operations and Crisis Management

Session: IT and Funding Challenges

Chair(s): Martin Starr

051-0293 Facilitation of Logistics Activities with Space Technologies in Humanitarian Crisis: The Case of Haiti

François-Xavier Delmonteil, Student, Ecole Polytechnique, France

Marie-Eve Rancourt, Assistant Professor, Université Du Québec A Montreal, Canada

Robert Backhaus, Senior Adviser, German Remote Sensing Data Center (DFD), Germany

Stakeholders are often not fully aware of space applications' leverage opportunities and how they can be used to facilitate relief logistics operations. Through a structured questionnaire, we assess benefits and difficulties of space applications for managing logistics activities during the 2010 Haitian crisis. Methodology, results and recommendations will be presented.

051-1380 The Interaction of POM and IT in Disaster Management

Martin Starr, Emeritus Professor, Rollins College, United States
Sushil Gupta, Professor, Florida International University, United States
David Darcy, Assistant Professor, Florida International University, United States

IT can help in the anticipation of crises, the prevention of crises and mitigation of damage severity. OM, in conjunction with IT, can play a central role in managing disasters. We present the current state of research on interaction between OM and IT and provide directions for future research.

051-0524 Inventory Management in Humanitarian Operations: The Effect of Funding Structures

Tezar Saputra, Student, Vrije Universiteit Amsterdam, Netherlands
Sander De Leeuw, Associate Professor, Vrije Universiteit Amsterdam, Netherlands
Karin de Smidt-Destombes, Assistant Professor, Vrije Universiteit Amsterdam, Netherlands

In this presentation we discuss a system dynamics model for inventory management in relation to funding in humanitarian operations. We particularly focus on the inventory performance outcomes of different funding structures.

051-0448 Cash for Transfer Programmes and their Impact on Humanitarian Logistics

Graham Heaslip, Associate Professor, National University of Ireland Maynooth, Ireland

A considerable amount of humanitarian aid will be delivered as cash assistance in the future, either in replacement or alongside more traditional assistance. This change in operation will also affect the requirement on the skills and abilities of humanitarian logisticians and service providers. This paper examines the implications to logisticians.

350 Sunday, 04:30 PM - 06:00 PM, International B *Track:* Learning and Knowledge Management in OM
Session: Knowledge Transfer and Learning in Distributed Project Settings
Chair(s): Paulo Gomes

051-0626 Learning to Innovate: A Longitudinal Analysis of Idea Competitions inside a Large Company

Sebastian Fixson, Associate Professor, Babson College, United States

Idea competitions have grown in number and sophistication in recent years. In this paper, we study how an internal idea competition inside a large company has evolved over time as it reflects the company's learning of how to innovate within its own context and constraints.

051-0690 Challenges for Organizational Learning in Distributed Work Environments

Paulo Gomes, Lecturer, Babson College, United States

The study describes different facets of learning in distributed development work, and develops a framework that relates the effectiveness of organizational learning processes to the type of task, characteristics of the task experience, and the environmental context in which distributed work is being performed.

051-0371 The Role of Supply Network Structure and Its Relationship with Firm Innovation

Marcus Bellamy, Student, Georgia Institute of Technology, United States
Soumen Ghosh, Professor, Georgia Institute of Technology, United States
Manpreet Hora, Assistant Professor, Georgia Institute of Technology, United States

We investigate the relationship between three supply network characteristics (accessibility, interconnectedness, and network partner innovativeness) and firm innovation output. Based on a sample of 425 firms, our findings suggest direct benefits from supply network accessibility and partner innovativeness on firm innovation output as well as a moderating effect from interconnectedness.

051-0103 Knowledge-Based View of Outsourcing Strategies for New Product: A Game Theoretic Model

Qiong Chen, Student, Clemson University, United States
Gulru Ozkan, Assistant Professor, Clemson University, United States
Shouqiang Wang, Assistant Professor, Clemson University, United States
Aleda Roth, Professor, Clemson University, United States

We introduce a signaling game to examine the outsourcing strategies of a buying firm that faces two options in determining a manufacturer to produce its new product: outsource directly or indirectly (through an intermediary). We demonstrate the critical yet interesting role of outsourcing knowledge on the buying firm's outsourcing strategies.

051-0802 Solution's Architecture Modularity and Project Performance: A Conditional Process Analysis

Juan Madieto, Student, Instituto De Empresa, Spain
Fabrizio Salvador, Professor, IE Universidad, Spain

Firms use knowledge embedded in modular architecture solutions to facilitate project management and improve performance. We contend, however, that the link between the solution's modularity degree and performance is mediated by the presence of modular organization arrangements and contingent on the project-manager's experience of working with the selected solution's architecture.

351 Sunday, 04:30 PM - 06:00 PM, International C *Track:* Supply Chain Risk Management
Session: New Topics in Supply Chain Risk
Chair(s): Vahid Nooraie

051-1057 Organizational Implementation of Supply Chain Risk Management

Wolfgang Kersten, Professor, Hamburg University of Technology, Germany
Meike Schroeder, Student, Hamburg University of Technology, Germany
Max Feser, Student, Hamburg University of Technology, Germany

Supply chain risk management (SCRM) is a major challenge for supply chain management. Nevertheless a lack of knowledge about SCRM implementation exists. Based on an extensive literature review, expert interviews, and case studies a framework has been developed, that supports a successful implementation of SCRM according to company specific needs.

051-1178 Managing Operating Integrity

Maryam Memar Zadeh, Student, Western University, Richard Ivey School of Business, Canada

Many studies investigate managing risk in supply chain but what remains less explored is managing the risk associated with noncompliance at the level of execution of tasks. This study addresses the necessity of compliance and assesses the means by which firms ensure adherence to the execution-based principles and standards.

051-0112 Reinforcing Feedback in Resilient Supply Chains: Revealing the Snowball Effect in the Transfer of Disruptions

Artur Swierczek, Associate Professor, University of Economics, Poland

The paper attempts at investigating a reinforcing feedback in resilient supply chains in regard to the "snowball effect" in the transmission of disruptions. The theoretical considerations on the idea of reinforcing feedback in resilient supply chains are evidenced by cross-industrial findings of the secondary studies conducted worldwide.

051-0764 A Multi-Objective Approach to Supply Chain Risk Management: Integrating Visibility with Supply and Demand Risk

Vahid Nooraie, Student, North Carolina A&T State University, United States

Mahour Mellat-Parast, Assistant Professor, North Carolina A&T State University, United States

We present a supply chain risk model that integrates supply chain visibility with supply and demand risk and examines their impact on supply chain performance. A heuristic algorithm is used to simplify the model and to show how a multi-objective approach can provide a near optimal solution.

Sessions for Monday, May 12

Monday, 08:00 AM - 09:30 AM

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Monday, 08:00 AM - 09:30 AM, A601

Track: Behavior in Operations Management

Session: Groups and Social Factors in Operations (I)

Chair(s): Xiaomeng Guo

051-0404 Loss Allocation in a Supply Chain with Fairness Concerns

Wang Ke, Student, University of Science and Technology of China, China
Zhao Tianyi, Student, University of Science and Technology of China, China
Liang Liang, Professor, University of Science and Technology of China, China

This paper studies the loss allocation problem in a supplier-retailer supply chain when the retailer reveals fairness concern. A loss-sharing contract is provided to coordinate such a loss and some new interesting management insights are found and some numerical examples are proposed also to show our results.

051-0420 Two Stage Efficiency Decomposition Model with the Fairness Concern Sub-Units

Jun Wang, Student, University of Science and Technology of China, China
Yong Zha, Lecturer, University of Science and Technology of China, China
Wang Ke, Student, University of Science and Technology of China, China
Liang Liang, Professor, University of Science and Technology of China, China

We incorporate the concept of fairness in a conventional two-stage process to inquire how fairness may affect overall and individual stage efficiency. The relations among the non-cooperative, cooperative and standard DEA approaches are investigated when two sub-units are concerned about fairness. An empirical example is shown to verify the approach.

051-1058 What Leads to Trust in Buyer-Supplier Relationships?

Janaina Siegler, Student, Fundacao Getulio Vargas, Brazil
Barbara Flynn, Professor, Indiana University, United States
Mohan Tatikonda, Professor, Indiana University, United States

Prior research has shown trust's importance in B2B environment. This study investigates how loss aversion and biases related to it (status-quo bias, hyperbolic discount and framing effects) may affect the building of (dis)trust at the individual level and their relationship to commitment and willingness to pay at the firm level.

051-0783 Signaling through Price and Quality to Consumers with Fairness Concerns

Xiaomeng Guo, Student, Washington University in St. Louis, United States
Baojun Jiang, Assistant Professor, Washington University in St. Louis, United States

Consumers with inequity aversion experience some psychological disutility when buying products at unfair prices. We show that a firm's optimal quality may be non-monotone in the degree of consumers' inequity aversion. Stronger inequity aversion may benefit a firm and lead to lower monetary payoffs for consumers.

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Monday, 08:00 AM - 09:30 AM, A602

Track: Humanitarian Operations and Crisis Management

Session: Metrics and Measurement Systems

Chair(s): Jennifer Bealt

051-0056 An Integrated Disaster Relief Supply Chain Network Model with Time Targets and Demand Uncertainty

Anna Nagurney, Professor, University of Massachusetts Amherst, United States
Amir Masoumi, Assistant Professor, Manhattan College, United States
Min Yu, Assistant Professor, University of Portland, United States

We develop a supply chain network model for a disaster relief organization in charge of serving disaster-prone regions. Our system-optimization approach utilizes goal programming to enforce the timely delivery of relief items with respect to the pre-specified time targets subject to the uncertain demand being satisfied as closely as possible.

051-0198 Driving the Effectiveness and Efficiency of Recovery through the Utilisation of Collaborative Aid Networks

Jennifer Bealt, Student, Brunel University, United Kingdom
Afshin Mansouri, Senior Lecturer, Brunel University, United Kingdom
Ramzi El-Haddadeh, Senior Lecturer, Brunel University, United Kingdom

This research aims to explore the role of pre-existing networks known as Collaborative Aid Networks (CANs) in enhancing the efficiency and effectiveness of recovery operations post disaster. A literature review and case studies of recent disasters are used for theorizing the impact of CANs on supply chain drivers during recovery.

051-0211 Direct Relief - Implementing a Quality Management System in a Humanitarian NGO

Ross Comstock, IT and Quality Head, Direct Relief, United States
Katie Arnold, Quality, Direct Relief, United States
Geoffrey Slaff, Lecturer, University of California Santa Barbara, United States

Direct Relief, founded 65 years ago, is a non-profit, non-partisan organization that provides medical assistance to people around the world who have been affected by poverty, natural disasters, and civil unrest. This paper will describe how Direct Relief is driving continuous improvement by implementing a quality management system.

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Monday, 08:00 AM - 09:30 AM, A701

Track: Supply Chain Management

Session: Supply Chain Integration and Coordination

Chair(s): Andréia de Abreu

051-0649 Effects of Supply Chain Integration on Buyer Firm Performance Considering Buyer and Supplier Firm Practices

Euibeom Jeong, Student, Korea University, Korea, Republic of (South Korea)
DaeSoo Kim, Professor, Korea University, Korea, Republic of (South Korea)

This study proposes the relationships among buyer firm knowledge transfer practice, supply chain integration and buyer firm performance mediated by supplier firm practice. Based on the data from Korea Productivity Center, we investigate the hypothesized relationships using structural equation modeling. The analysis offers various managerial implications on supply chain integration.

051-0853 Supply Chain Managers: Professional Profile and the Role in the Cross-Functional Integration of SCM

Andréia de Abreu, Student, Universidade Federal De São Carlos, Brazil
Rosane Lúcia Alcantara, Associate Professor, Universidade Federal De São Carlos, Brazil

Supply chain management can be seen as a way to achieve integration of all corporate functions. Due to this, the objective of this paper is to present the theoretical indications regarding professional profile recommended for the supply chain management and discuss the role of these professionals in cross-functional business processes.

051-0107 Coordination of a Supply Chain with New Products

Wang Ke, Student, University of Science and Technology of China, China
Sun Jinwen, Student, University of Science and Technology of China, China
Jun Wang, Student, University of Science and Technology of China, China
Liang Liang, Professor, University of Science and Technology of China, China

In this paper, we consider the coordination issue on a supply chain when the firm on this chain tries to produce new products. By considering the risk of new products, three contracts, constant wholesale price contract, revenue sharing contract and linear quantity discount policy, are investigated.

051-1181 Does Environmental Uncertainty Really Matter in Supply Chain Integration for New Product Development?

Luciano Carvalho, Student, Fundacao Getulio Vargas, Brazil
Ely Paiva, Associate Professor, Fundacao Getulio Vargas, Brazil

This article aims to verify if the environmental uncertainty influences on the company's willingness to involve suppliers, customers and manufacturing in new product development's projects. In addition, we strive to find out the ripple influence of those agents on new product performance, considering the firm's absorptive capacity as mediating variable.

355	Monday, 08:00 AM - 09:30 AM, A702	<i>Track:</i> Purchasing and Supply Management
	<i>Session:</i> Understanding supplier relationships	
	<i>Chair(s):</i> Christoph Bode	

051-0581 The Sources of Value Creation in Buyer-Supplier Relationships

Priscila Miguel, Professor, Fundacao Getulio Vargas, Brazil
Luiz Brito, Professor, Fundacao Getulio Vargas, Brazil

The buyer-supplier literature emphasizes that collaborative relationships result in higher value creation. However, few studies had empirically tested the way how this value is created in different types of transactions. Based on qualitative interviews with 28 respondents, this study identified four different sources of value creation in buyer-supplier relationships.

051-0698 The Effect of Supplier Development Programs in the Suppliers' Long-term Performance: A Longitudinal Study

Jorge Rodriguez, Student, Esade Business School, Spain
Cristina Gimenez, Associate Professor, Esade Business School, Spain

Prior research suggests that suppliers are not able to sustain the improvements from supplier development programs. This paper studies whether supplier development programs explain supplier's long-term performance. We conduct a longitudinal study among farmers of a large cooperative which offer technical assistance to its members.

051-0922 Understanding Individual Buyer-Supplier Relationships: A New Methodology

Canan Kocabasoglu Hillmer, Senior Lecturer, Cass Business School, United Kingdom
Steven Hillmer, Professor, University of Kansas, United States

Few existing studies on buyer-supplier dyads have considered each relationship individually. Also, methodologies currently used with matched-pair samples do not make full use of the dyadic dataset. Accordingly, we suggest a new methodology and illustrate with a real-life example considering issues at the relationship level.

051-1322 Economic and Social Rewards and their Effects on Future Collaboration in Buyer-Supplier Relationships

Christoph Bode, Assistant Professor, Tilburg University, Netherlands

This empirical study investigates how perceived fairness of value-sharing processes, in terms of economic and social rewards, affects the future of buyer-supplier relationships. Results suggest that prior negotiations are able to mitigate the effects of economic rewards and that social and economic rewards can compensate for each other.

356	Monday, 08:00 AM - 09:30 AM, A703	<i>Track:</i> Product Innovation and Technology Management
	<i>Session:</i> Strategic Factors of Innovation	
	<i>Chair(s):</i> Wilson Roberto Zatti	

051-0217 Perceived Quality as a Competitive Strategy at a Construction Company in Southeastern Brazil

Thais Horta, Engineer, Alubras, Brazil
Luiz Alves, Professor, Universidade Federal De Juiz De Fora, Brazil

The paper presents the results of using perceived quality as a competitive advantage and the application of a multi-criteria decision support model as a way of prioritizing strategic actions for achieving perceived quality from the customer perspective at a construction sector company in Southeastern Brazil.

051-0360 Interfaces and Boundaries of Guidance for Innovation in Small Brazilian Companies

Tonny Rodrigues, Associate Professor, Faculdade Santo Agostinho, Brazil

Átila Lira, Associate Professor, Faculdade Santo Agostinho, Brazil
Irenilza Nâas, Professor, Universidade Paulista - Unip, Brazil

The study offers two important conclusions. The challenges for innovation can be perceived along three dimensions: design innovation, the implementation of innovation and functional area of innovation. And the data confirms that small Brazilian companies generally have difficulties to sell their innovations.

051-0713 The Influence of Internal Factors on Absorptive Capacity of Brazilian Small Businesses

Helma Souza-Pinto, Student, Universidade Federal de Pernambuco, Brazil
Marcos Oliveira, Professor, Universidade Federal de Pernambuco, Brazil
Gabriela Galvão, Student, Universidade Federal de Pernambuco, Brazil

The purpose of this research is measure the influence of internal factors on Absorptive Capacity of small-businesses participants in the Local Agents of Innovation SEBRAE program. In order to assess "absorption", the indices of "innovation radar" will be ex ante and ex post compared. Hence, the most influential factors will be appraised.

051-1002 Strategic Project Portfolio Management in Multinational Companies: A Case Study

Wilson Roberto Zatti, Student, Fundacao Getulio Vargas, Brazil
Orlando Cattini Junior, Associate Professor, Fundacao Getulio Vargas, Brazil

The study examines how the projects are identified, assessed and prioritized in order to contribute to the strategies chosen by companies. A case study in the Brazilian branch of a multinational automaker compares what is proposed by the literature with what actually takes place in practice.

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Monday, 08:00 AM - 09:30 AM, A704

Track: General Track

Session: Operational Capabilities and Global Strategy

Chair(s): Abdulkareem Awwad

051-0884 Cumulative Capabilities in an Emerging Country

Marcia Scarpin, Student, Fundacao Getulio Vargas, Brazil

An issue in operations literature is the ideal sequence composing operational capabilities. Studies of the sand cone model have been conducted on a huge amount of countries, but few of them on emerging countries. So, this study aims to analyze the sequence of operational capabilities in Brazilian industry.

051-1189 Factors of Competitiveness in Service Export: A Theoretical Model for Small and Middle-sized Companies

Danielle Pozzo, Professor, FADERGS - Faculdade de Desenvolvimento do Rio Grande do Sul, Brazil
Gabriela Paschoal, Student, FADERGS - Faculdade de Desenvolvimento do Rio Grande do Sul, Brazil
Tamires Matte, Student, FADERGS - Faculdade de Desenvolvimento do Rio Grande do Sul, Brazil

The present study aims to map factors of competitiveness in service export in order to enhance competitiveness of brazilian small and middle-sized companies. After an exploratory phase (paper 1), a theoretical model was built as a generic framework for competitiveness analysis.

051-0054 Operations and Marketing Managers' Perceptions of Turnaround Strategies and Corporate Decline: An Applied Study

Abdulkareem Awwad, Associate Professor, Qatar University, Qatar

The study investigated the impact of turnaround strategies on the recovery from corporate decline in Jordanian manufacturing. The results indicated that the organizational performance of declined firms can be improved by utilizing the following turnaround strategies- (1) Revenue generation, (2) Product/market refocusing, (3) Asset reduction, and, (4) Productivity improvement

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Monday, 08:00 AM - 09:30 AM, A705

Track: Healthcare Operations Management

Session: Public Health

Chair(s): Turgay Ayer

051-0309 The Impact of Patient Profile Information on Mammographic Interpretation: Bias in Clinical Decision Making

Mehmet Ayyaci, Assistant Professor, University of Texas Dallas, United States
Srinivasan Raghunathan, Professor, University of Texas Dallas, United States
Mehmet Ahsen, Student, University of Texas Dallas, United States
Zahra Gharibi, Student, Southern Methodist University, United States

Availability of patient's risk profile at the time of mammography interpretation could complicate management of breast cancer such that radiologists may be biased. We demonstrate the potential benefits and harms of profile bias using a decision analytic model. Our model aggregates cancer risk obtained from mammography and profile information.

051-0478 The Systematic Design of Cancer Screening Policies

Dimitris Bertsimas, Professor, Massachusetts Institute of Technology, United States
John Silberholz, Student, Massachusetts Institute of Technology, United States

Prostate cancer is the most common non-skin cancer in U.S. men, yet there is no consensus about the effectiveness of screening for the disease. We systematically review published decision analyses for prostate cancer screening and identify robustly optimal screening policies that perform well across the diversity of published modeling assumptions.

051-1177 Improving Geographic Equity in Kidney Transplantation Using Alternative Kidney Sharing and Optimization Modeling

Sanjay Mehrotra, Professor, Northwestern University, United States
Ashley Davis, Student, Northwestern University, United States
John Friedewald, Associate Professor, Northwestern University, United States

We analyze current kidney allocation and develop an alternative kidney sharing strategy using a multi-period linear optimization model, KSHARE. We find that within the 600 mile radius the disparity reduces by four fold. However, only incremental improvement is possible beyond this point.

051-0777 Optimal Surveillance for Hepatocellular Carcinoma (HCC) in Hepatitis C Patients: A Societal Perspective

Qiushi Chen, Student, Georgia Institute of Technology, United States
Turgay Ayer, Assistant Professor, Georgia Institute of Technology, United States

Jagpreet Chhatwal, Assistant Professor, The University of Texas MD Anderson Cancer Center, United States

The practice guidelines recommend surveillance for HCC, the main type of liver cancer, in high-risk hepatitis C patients every 6-12 months. However, the optimal surveillance interval is controversial. We present a mixed-integer programming-based approach to evaluate the cost-effectiveness of routine and dynamic policies. We found that dynamic outperform routine policies.

359	<p>Monday, 08:00 AM - 09:30 AM, A706</p> <p>Session: Treatment Policies and Re-admission Reduction</p> <p>Chair(s): Senay Solak</p>	<p>Track: Healthcare Operations Management</p>
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051-1041 Substitution Order for Perishable Inventory Management
Gina Dumkrieger, Student, Arizona State University Tempe, United States

For families of perishable products in which some members can substitute for subsets of other members the order in which products are substituted can significantly affect demand for each member. The order can be manipulated to reduce expiring units. Blood for transfusion is the example here.

051-0765 A Prediction Model for Readmission
Naeimeh Radnia, Student, University of Massachusetts Boston, United States
Davood Golmohammadi, Assistant Professor, University of Massachusetts Boston, United States

Re-hospitalization is a major concern for the U.S. healthcare system. We aim to spot those patients who will probably be admitted to the hospital again with a high length of stay to take preventive alternative measures. We developed a prediction model and identified the key variables influencing a readmission.

051-0287 Modeling Patient-Specific Treatment Outcomes for Improved Coronary Heart Disease Management
Greggory Schell, Student, University of Michigan Ann Arbor, United States
Mariel Lavieri, Assistant Professor, University of Michigan Ann Arbor, United States
Wyndy Wiitala, Research Health Science Specialist, U.S. Department of Veterans Affairs, United States
Jeremy Sussman, Assistant Professor, University of Michigan Ann Arbor, United States
Rodney Hayward, Professor, University of Michigan Ann Arbor, United States

We propose a general approach for incorporating robust modeling of patient-specific parameters as they relate to sequential treatment decisions. Our framework is applied to derive optimal control policies for minimizing a patient's lifetime expected number of coronary heart disease events.

051-0233 Optimal Treatment Policies for Pelvic Organ Prolapse in Women
Yueran Zhuo, Student, University of Massachusetts Amherst, United States
Senay Solak, Assistant Professor, University of Massachusetts Amherst, United States

It is estimated that approximately 40% of women between ages 45-85 has significant pelvic organ prolapse (POP), which is a condition with major implications for a patient's quality of living. We develop a stochastic dynamic framework and derive optimal policies for selecting treatment options for POP based on patient state.

360	<p>Monday, 08:00 AM - 09:30 AM, A707</p> <p>Session: Insights through Case Studies</p> <p>Chair(s): Marcus Bellamy</p>	<p>Track: Product Innovation and Technology Management</p>
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051-0188 Ambidexterity in Supply Chains: A Study of SMEs Clusters in India
MohdNishat Faisal, Associate Professor, Qatar University, Qatar

This paper investigates ambidexterity in SMEs clusters which are oriented towards export markets. Innovation is the key for their survival, but these SMEs are more focused on the exploitation with a neglect of exploration part. The paper looks into the key drivers/barriers to ambidexterity in these supply chains.

051-0438 Sustainability as Driver of Corporative Innovation: A Case Study in the Brazillian Petrochemical Sector
Vanessa Pinsky, Student, University of São Paulo, Brazil
Maria Popi, Student, University of São Paulo, Brazil
João Amato-Neto, Professor, Universidade De Sao Paulo, Brazil
Luiz Kulay, Assistant Professor, University of São Paulo, Brazil
Isak Kruglianskas, Professor, University of São Paulo, Brazil

This article analyses the influence of sustainability aspects to corporate innovation. It was performed a qualitative-exploratory research with Oxiteno SA, a Brazilian multinational petrochemical company. Oxiteno's innovation strategy focuses on differentiation and competitiveness. In this case, a sustainable product associates cost and technical performance criteria to principles of Green Chemistry.

051-0684 Creation and Appropriation of Value through Innovation in 2 Agricultural Technology-Based Companies
Antonio Vasconcelos Neto, Student, Fundacao Getulio Vargas, Brazil
Marcelo Bradaschia, Student, Fundacao Getulio Vargas, Brazil
Luiz Di Serio, Professor, Fundacao Getulio Vargas, Brazil

Objective: To evaluate the value creation through innovation and new capabilities. 2 agricultural technology-based companies were studied in conjunction with an Institution of Science and Technology. Results: potential for creation and appropriation of value through new processes and technologies; collaboration between the institutions for NPD; compared with main theoretical lenses.

051-0868 Some Contributions to Management, Theory and Research of Innovation from a Multiple Case Study.
Luiz Di Serio, Professor, Fundacao Getulio Vargas, Brazil
Jaime Oliveira, Student, Fundacao Getulio Vargas, Brazil
Celso Malachias, Student, Fundacao Getulio Vargas, Brazil

Rothwell (1994) suggested an innovation model based on five generations. Hobday (2005) highlighted weaknesses of model: theoretical basis, empirical evidence and systemic view. Besides not recognize the diversity and unpredictability of innovation. Through multiple case study involving five global companies, we aim to deepen knowledge and contribute with empirical research.

051-0459 The Transformative Impact of Disruptive Technologies: Insights from a Computational Model

Rahul Basole, Associate Professor, Georgia Institute of Technology, United States
 Marcus Bellamy, Student, Georgia Institute of Technology, United States
 Md Atiq Bhuiyan, Student, Georgia Institute of Technology, United States
 Geet Lahoti, Student, Georgia Institute of Technology, United States
 Hsu-Pin (Ben) Wang, Professor, Georgia Institute of Technology, United States
 Chuck Zhang, Professor, Georgia Institute of Technology, United States

We develop a computational model examining structural transformations at the process and supply network level when injecting a new disruptive technology into a manufacturing enterprise. We present a case study of a product involving both conventional and additive manufacturing technologies and discuss our key findings and future research opportunities.

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Monday, 08:00 AM - 09:30 AM, A708

Track: Revenue Management and Pricing

Session: Empirical Models in Revenue Management and Pricing

Chair(s): Necati Tereyagoglu Benny Mantin

051-0125 The Impact of Baggage Fees on Airlines' Operations and Demand

Mark Ferguson, Professor, University of South Carolina, United States
 Mariana Nicolae, Student, Eastern Michigan University, United States

We empirically test the impact of check bag fees on airlines' departure delay performance. While this study addresses the operation impact, we follow it with a second study based on choice-based surveys to determine if customers who check bags are more/less valuable to an airline than non bag checkers.

051-0510 An Empirical Analysis of the Impact of Customer Price and Sales Expectations on Dynamic Pricing Strategies

Necati Tereyagoglu, Assistant Professor, Georgia Institute of Technology, United States
 Senthil Veeraraghavan, Associate Professor, University of Pennsylvania, United States

In a setting with repetitive ticket purchases, we empirically test whether customers are loss-averse on both price and sales attributes using transaction level data from a well-known symphony orchestra in the US. We characterize optimal pricing decisions with respect to estimated loss-aversion parameters through counterfactual experiments.

051-0558 Strategic Consumers, Revenue Management and the Design of Loyalty Programs

Anton Ovchinnikov, Assistant Professor, University of Virginia, United States
 So Yeon Chun, Assistant Professor, Georgetown University, United States

We discuss RM implications of the design of premium-status ("Gold") loyalty programs. We compare volume-based and spending-based designs and show how the firm can benefit from the behavior of strategic consumers who would fly/spend more in order to qualify for the Gold status.

051-0582 On the Information Embedded in Pricing Behavior of Airline Tickets

Benny Mantin, Assistant Professor, University of Waterloo, Canada
 Eran Rubin, Assistant Professor, Holon Institute of Technology, Israel

The airline industry has embraced the internet to frequently update prices of airline tickets. Can price movements induce consumers to pay more for the tickets and increase sales volumes? Controlling for market characteristics, we explore the link between price volatility, sales levels, as well as transacted airfares' dispersion and levels.

362

Monday, 08:00 AM - 09:30 AM, L508

Track: Service Operations

Session: Cultivating positive service experiences

Chair(s): Run Niu

051-1233 A Study of Queues and Customer Service in Bazillian Retail Banks Agencies

Claude Machline, Emeritus Professor, Fundacao Getulio Vargas, Brazil
 Fernando Serson, Assistant Professor, Fundacao Getulio Vargas, Brazil

This paper focuses queues lengths and customer service offered by retail banks agencies in São Paulo, the largest Brazilian and South America city. Through almost 800 instantaneous observations during one year of queues and ATM-automatic teller machines, the service level was appraised and found to be fair.

051-0774 Retailer Service Quality and Customer Loyalty: Empirical Evidence in Vietnam

Anh Phan, Lecturer, Vietnam National University, Hanoi, Vietnam
 Ha Nguyen, Lecturer, Vietnam National University, Hanoi, Vietnam
 Minh Nguyen, Lecturer, Vietnam National University, Hanoi, Vietnam
 Odkhishig Ganbold, Student, Yokohama National University, Japan
 Yoshiki Matsui, Professor, Yokohama National University, Japan

This study investigates the relationship between retailer service quality and customer loyalty by conducting questionnaire survey on 1200 buyers in several supermarkets in Vietnam. Statistical analysis results indicate the significant link between customer loyalty, customer satisfaction, and such dimensions of service quality as responsiveness, empathy, and assurance.

051-0179 Impact of Social Media on Service Operations

Run Niu, Assistant Professor, Webster University, United States
 Ying Fan, Assistant Professor, University of Colorado Colorado Springs, United States

With the popularity of social media and review websites, businesses have seen them as channels to enhance service operations. However, the strategies businesses adopt to manage the reviews are not clear. In this study, we interviewed business managers regarding this issue and proposed a theoretical framework.

051-0936 An Institutional Theory Perspective on the Behavior of Consumers and Companies Regarding Customers' Evaluation

Michele Esteves Martins, Student, IE Business School / Fundacao Getulio Vargas, Spain

This paper aims to investigate the institutional aspects that may influence behavior of companies and customers in dealing with customers' monitoring behavior on service provision. Specifically, it looks at customer's ratings and comments about their experience in hotels as well as institutional responses that are available in the internet.

363	Monday, 08:00 AM - 09:30 AM, M101	<i>Track:</i> Information Systems
	<i>Session:</i> Applications of Emerging Information Technologies	
	<i>Chair(s):</i> Bruce Golden	

051-1034 The Cloud Computing as a New Paradigm of Information Technology and Communication and a New Business Environme

Antonio Galhardi, Professor, Centro Estadual de Educação Tecnológica Paula Souza, Brazil
Marília Azevedo, Professor, CEETPS, Brazil

The business environment is constantly changing. In this context, organizations differ in many characteristics, both on goals, your decision process, technology used, etc.. So there is a new computing paradigm,- The Cloud Computing. Thus, this paper presents the Cloud Computing and its possible use as on market-based resource management strategies.

051-0871 A Cloud Computing Based Management Framework for WEEE (Waste Electrical and Electronic Equipment) Recycling

Xuran Ivan Li, Student, Hong Kong Polytechnic Univ, Hong Kong
Tsan-Ming Choi, Associate Professor, The Hong Kong Polytechnic University, Hong Kong
Shuyun Ren, Student, Hong Kong Polytechnic Univ, Hong Kong
Daniel M. Cheng, President, Hong Kong Environmental Industry Association, Hong Kong

To reduce the WEEE disposed or exported to developing countries, several governments are establishing different WEEE recycling programs. To improve the efficiency of waste tracking, logistic and financial flow, and the public engagement of WEEE recycling program, this paper proposes a cloud computing based management framework for WEEE recycling.

051-1245 Representation of Features Based on Domain-adaptive Dictionaries

Yongjie Chu, Student, Southeast University, China
Lindu Zhao, Professor, Southeast University, China

Instead of using data-driven dictionaries, this paper applies domain-adaptive dictionaries to represent face images. Then a kernel-based support vector machine is applied to classify images. Experimental results demonstrate that new method of representation can model both source and target face images more precisely and achieve impressive performance in recognition.

051-0224 OAR Lib: An Open Source Arc Routing Java Library

Oliver Lum, Student, University of Maryland, United States
Bruce Golden, Professor, University of Maryland, United States
Carmine Cerrone, Student, University of Maryland, United States

We present computational results for a new Open-source Arc-Routing Library (OAR Lib). The java library provides an extensible graph architecture, and solves to some fundamental problems in the field of Arc Routing; targeted at allowing new Operations Researchers to quickly begin writing their own code.

364	Monday, 08:00 AM - 09:30 AM, M102	<i>Track:</i> Inventory Management
	<i>Session:</i> Inventory models	
	<i>Chair(s):</i> Linwei Xin	

051-0468 Suitability of a Continuous (s, Q) Inventory Policy versus a Periodic Review Policy with Long Lead Times

Eric Porras, Professor, Tecnológico De Monterrey, Mexico
Edgar Granda, Student, Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico

We study the performance of a continuous inventory review system with re-order point versus a periodic review policy with a fill rate service level constraint and long lead times. We evaluate both policies for a company providing material for the pharmaceutical industry.

051-0639 Distributionally Robust Inventory Control when Demand is a Martingale

David Goldberg, Assistant Professor, Georgia Institute of Technology, United States
Linwei Xin, Student, Georgia Institute of Technology, United States

Independence of random demands across different periods is typically assumed in multi-period inventory models. We consider a distributionally robust model in which the sequence of demands must take the form of a martingale. We draw some interesting conclusions about the difference between the "independence" and "martingale" assumptions in terms of optimal value and policy.

051-0718 Using Simulation to Optimize the Working in Process (WIP) in a Production System, Case Study

Rodrigo Ferro, Student, UNIMEP, Brazil
Andre Helleno, Professor, UNIEMP, Brazil
Aroldo Moraes, Assistant Professor, UNIMEP, Brazil
Maria Oliveira Papa, Professor, The Methodist University of Piracicaba, Brazil

The goal of this paper is to use simulation for an agile and lean manufacturing system of production a Brazilian companies. The results detail the method used to apply simulation and optimization of the system and show a 68% reduction of work in process.

051-1356 Exploring the Effects of Serially-Correlated Demand Acting over a Stochastic Inventory System

Rafael Diaz, Associate Professor, Old Dominion University, United States

Managerial lack of knowledge of positive serially-correlated demand acting over an inventory system may result in underperformance. This distortion in demand expectations has responsiveness and efficiency implications for the supply chain. This research explores the effects of autocorrelated demands on inventory cost and order quantities.

365

Monday, 08:00 AM - 09:30 AM, M103

Track: Learning and Knowledge Management in OM*Session:* Knowledge Management and Learning - II*Chair(s):* Nachiappan Subramanian**051-0800** A New Lean Tool Box for Knowledge Intensive Firms: Case of UK Business Schools

Robyn Eames, Student, Nottingham Trent University, United Kingdom
 Ehsan Sabet, Senior Lecturer, Nottingham Trent University, United Kingdom
 Baback Yazdani, Professor, Nottingham Trent University, United Kingdom

Purpose - Capturing the lessons from lean manufacturing, this paper will develop a new lean toolbox for Knowledge intensive firms (KIF) service industry, using some UK-based Business Schools as examples of KIF, with regards to internal stakeholders, in order to provide competitive operations management in a constantly developing market.

051-0831 Teacher-Student Relationship Influence on Speed and Quality of Knowledge Transfer in the Chinese Universities

Nachiappan Subramanian, Associate Professor, Nottingham University Business School China, China
 Xiaofeng SHAN, Student, Nottingham University Business School China, China
 Muhammad Abdulrahman, Assistant Professor, Nottingham University, China

This study identifies the moderating and mediating role of teacher-student relationship on knowledge transfer in the Chinese universities. Using communication, translation, relationship theories and structural equation modelling this study illustrates teacher-student relationship effect on quality and speed of knowledge transfer from 220 dyadic data.

051-0040 SVM Classifiers Based on Imperfect Training Data

Tapan Bagchi, Retired, NMIMS Shirpur, India

This paper extends soft margin support vector machines (SVM)-by analytically modeling the impact of imperfect class labeling in the training data. It uses ROC and statistically designed experiments to reveal that misclassifications affect training quality, and hence the SVM's performance. Our results show that misclassifications increase generalization error.

051-0014 Using Contests to Teach Humanitarian Supply Chains to Business Students: PSAID Example

Koray Ozpolat, Assistant Professor, University of Rhode Island, United States

As part of the introductory operations course, we use project based learning and assign business students a semester long project in humanitarian-supply-chains. Working in teams, students design public-service-announcements and submit to the national PSAid contest. Semester grades show that student comprehension of humanitarian-supply-chains is significantly above non-project based topics.

366

Monday, 08:00 AM - 09:30 AM, M104

Track: Supply Chain Management*Session:* Global Supply Chain Management*Chair(s):* Muhammad Abdulrahman**051-0735** Understanding Latin American Supply Chains: An Academic Perspective

Martin Tanco, Professor, Universidad De Montevideo, Uruguay
 Matías Escuder, Student, Universidad de Montevideo, Uruguay
 Francisco Freires, Associate Professor, Universidade Federal da Bahia, Brazil
 Daniel Jurburg, Assistant Professor, Universidad de Montevideo, Uruguay

Through a literature review, eighteen difficulties were identified which hinders supply chain performance. Then, a survey was carried out to ranks those difficulties according to Supply Chain experts (scholars and consultants) from several Latin-American countries. Over one hundred responses were obtained from ten different Latin-American countries.

051-0776 Building Customer-Responsive Supply Chain: A Case Study of Combined Build-to-Order Production System in Beijing

Joongsan Oh, Associate Professor, Sookmyung Women'S University, Korea, Republic of (South Korea)
 Chulsoon Park, Assistant Professor, Sookmyung Women'S University, Korea, Republic of (South Korea)
 BooYun Cho, Assistant Professor, Jeju National University, Korea, Republic of (South Korea)

Beijing Hyundai Motor Corporation (BHMC) introduced combined build-to-order system in 2011. Dealers order items which can be forecasted as many as sold and those unpredictable only when customer order happens. By synchronizing supply chain, BHMC can reduce lead time and inventory level, increase operations efficiency, and raise customer satisfaction level.

051-0785 Examination of Chinese Exporters' Perspective on Port Corruption in Nigeria

Muhammad Abdulrahman, Assistant Professor, Nottingham University, China
 Nachiappan Subramanian, Associate Professor, Nottingham University, China

The importer/exporter is responsible for ensuring compliance with Customs and other regulatory requirements of his/her various business destinations. Compliance doesn't always result in friction-free clearance of goods due to corruption in developing countries. This study examines the Chinese exporters' perspective on port corruption in Nigeria and highlights the critical factors.

051-0858 Supply Chain Management and Relational Competitive Advantage in Traditional Industries of Developing Countries

Fernando Viana, Professor, Universidade de Fortaleza, Brazil
 José Sousa Filho, Assistant Professor, Universidade de Fortaleza, Brazil

This multiple case study investigated the role of supply chain management in the relational competitive advantage by companies from the textile, footwear and food industries in the northeastern region of Brazil. We concluded that the manufactured products from each sector influenced directly the relational competitive advantage.

051-0729 An Analysis of the Brazilian Ethanol Supply Chian

Ricardo Machado, Professor, Pontifical Catholic University of Goiás, Brazil

The research analyzes the Brazilian ethanol supply chain, using the Theory of Constraints. The results show that supply chains are made up of the production of sugar cane, manufacture, distribution and sale of ethanol. The restrictive stage of the whole supply chain is related to grinding the sugar cane.

367	<p>Monday, 08:00 AM - 09:30 AM, M106</p> <p><i>Track:</i> Sustainable Operations</p> <p><i>Session:</i> Industry Studies</p> <p><i>Chair(s):</i> Carol Cagle</p>
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051-0050 Is the U.S. Steel Industry Sustainable?

Carol Cagle, Assistant Professor, Mercer Univ Atlanta, United States
Allen Rubenfield, Lecturer, Mercer Univ Atlanta, United States

The effects of recycling, remanufacturing, and refurbishment may be one possible reason for the destabilization of the steel industry. We explore the impact of accounting conventions as they affect the three R's of sustainability throughout the extended supply chain for the U. S. steel industry.

051-0396 Impact from the Management of Water Use in Business Performance

Clandia Gomes, Professor, Santa Maria Federal University, Brazil
Isak Kruglianskas, Professor, University of São Paulo, Brazil
Roberto Bichueti, Student, Santa Maria Federal University, Brazil
Jordana Kneipp, Student, Santa Maria Federal University, Brazil
Luciana Aparecida Barbieri, Student, Santa Maria Federal University, Brazil
Beatriz Maffini Gomes, , ,

This study aims to identify the relationship between the management of water use and the business performance in the Brazilian mining sector. The results confirm that there is a positive relationship between these constructs corroborating the significant importance of this resource to the competitiveness of industries in the mining sector.

051-0434 Barriers for Implementation of EMS: A Study in the Construction Industry of Brazil and Slovenia

Lucila Campos, Associate Professor, Universidade Federal De Santa Catarina, Brazil
Andréa Trierweiler, Student, Universidade Federal De Santa Catarina, Brazil
Débora Spenassato, Student, Universidade Federal De Santa Catarina, Brazil
Antonio Bornia, Associate Professor, Universidade Federal De Santa Catarina, Brazil
Jana Selih, Associate Professor, University of Ljubljana, Slovenia

This article aims to present a framework of barriers to implementation of environmental management systems. The article presents a structure in sections that were also used in designing a questionnaire applied to identify the main barriers to implementing an EMS in Brazilian and Slovenian companies in the construction sector.

051-0742 Analysis of the Sustainability of Aviation Sector in the Context of Climate Anthropogenic Change

Getulio Akabane, Professor, CEETEPS/Anhanguera, Brazil
Joao Zaleski, Professor, Anhanguera, Brazil
Sergio Ruggiero, Professor, Anhanguera, Brazil
Luis Zulietti, Professor, Anhanguera, Brazil

Research shows that sustainable development of Brazilian Aeronautical Industry meets present needs formalizing commitments to preserving natural environment without compromising the ability of future generations. Adopts quantitative descriptive intentional non-probabilistic methodology and survey method is multiple-choice questions using Likert scale for analysis.

379

Monday, 09:45 AM - 11:15 AM, A601

Track: Behavior in Operations Management*Session:* Teaching of Behavioral Ops*Chair(s):* Jesus Orozco**051-0496** The Freeway Game

Francois Giraud-Carrier, Assistant Professor, University of Illinois at Springfield, United States

Glen Schmidt, Professor, University of Utah, United States

The Freeway game (<http://freeway.business.utah.edu>) is an online, multiplayer game that simulates traffic congestion to illustrate the concept of negative externalities. The Freeway game can be used for research as well as teaching in a variety of contexts, including behavioral economics, game theory, supply chain management and sustainability.

051-0588 Integrating Organization Behavior Models into the Teaching of Operations Management

Joel Goldhar, Professor, Illinois Institute of Technology, United States

Arjun Chakravarti, Assistant Professor, Illinois Institute of Technology, United States

Effective Operations require Effective Organizational Structure; and vice versa: or nothing gets done! Some suggestions on specific concepts and models from Social Psychology and SocioTechnical Systems Theory that have proven to be useful additions to the MBA 'core' OM course. Also offers a better way to conceptualize Services Management.

051-1083 Implications of Behavior in Decision Making: Findings from Business Simulation Workshops

Jesus Orozco, Assistant Professor, Ipad Business School, Mexico

Miguel Estrada, Professor, Ipad Business School, Mexico

Business simulation games represent good opportunities to analyse the role of behavior in operations management, particularly when they include role playing activities under complex scenarios. This paper presents some findings related to the observation of MBA workshops which simulate real-world business situations.

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Monday, 09:45 AM - 11:15 AM, A602

Track: Humanitarian Operations and Crisis Management*Session:* Preparation and Resource Allocation*Chair(s):* Nazli Turken**051-0251** Resource Allocation Policies for Minimizing Mortality in Mass Casualty Events

Izack Cohen, Assistant Professor, Technion Israel Institute of Technology, Israel

After a mass casualty event there is mounting demand for medical treatment, typically far in excess of the capacity to administer it. We develop allocation policies for the bottleneck resource, surgeons, to minimize mortality. Our results give rise to optimal and near-optimal management policies, which are also practical in reality.

051-0401 Resource Allocation for Non-Profits: A Case of Animal Shelters

Nazli Turken, Student, University of Florida, United States

Janice Carrillo, Associate Professor, University of Florida, United States

Anand Paul, Associate Professor, University of Florida, United States

In this paper, we are trying to analyze the rehoming/adoption process at the animal shelters using queuing theory and optimization approach. We use performance measures from M/M/k/k queues with and without ejections to compare traditional and adoption guarantee shelters, and then provide optimal budget allocation strategies.

051-0692 Considering Supplier Inventory in managing Prepositioned Stocks for Disaster Response

Julian Harke, Student, Vrije Universiteit Amsterdam, Netherlands

Pietro De Giovanni, Assistant Professor, Vrije Universiteit Amsterdam, Netherlands

Sander De Leeuw, Associate Professor, Vrije Universiteit Amsterdam, Netherlands

Wout Dullaert, Professor, Vrije Universiteit Amsterdam, Netherlands

Relief organizations can preposition items for disaster response. However, the majority of relief items are procured after a disaster strikes. Considering supplier inventory is essential for a successful disaster response. We use a differential game to study the impact of inventory policies in two-echelon supply chains.

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Monday, 09:45 AM - 11:15 AM, A701

Track: Supply Chain Management*Session:* Empirical Works in Supply Chain Management*Chair(s):* Dennis Chen**051-1027** Dimensions of the Leading Companies in Supply Chain Management

Richard Monroe, Associate Professor, East Carolina University, United States

Gartner publishes the Top 25 Supply Chains which originally was published by AMR Research about ten years ago. Companies on this list have proven to be outstanding supply chain performers. Gartner's criteria provide a limited range of performance dimensions. This paper will explore additional dimensions for supply chain leaders.

051-1038 An Empirical Evidence of Supply Chain Quality Related Customer Clusters in the Consumer Durables Industry

Vishwanath Hegde, Associate Professor, California State University East Bay, United States

Kaushik Sengupta, Associate Professor, Hofstra University, United States

Zinovy Radovitsky, Professor, California State University East Bay, United States

We examine supply chain quality issues in the consumer durables industry based on customer feedback and determine whether customers view aspects of the supply chain differently based on their experiences with purchased products. The results show existence of distinct customer clusters that relate customer feedback to supply chain quality issues.

051-1052 An Empirical Study of Masters Capstone Project Outcomes

Dwight Smith-Daniels, Professor, Wright State University, United States
James Hamister, Assistant Professor, Wright State University, United States

We present a review of outcomes for capstone projects over the course of 15 cohorts of the Masters of Science in Logistics and Supply Chain Management at Wright State University. Summary results are presented along case studies of significant projects.

051-1389 Supply Chain Management Publication Power

Dennis Chen, Assistant Professor, Belmont University, United States
Thomas Goldsby, Professor, Ohio State University, United States
Deepak Iyengar, Assistant Professor, Central Washington University, United States
Clyde Holsapple, Professor, University of Kentucky, United States

SCM researchers currently determine leading SCM academic journals through assorted methods. The authors utilize an alternate methodology using actual publication behavior. The researchers collect publication information over a ten years from active, tenured faculty at fifteen top SCM Universities in the US and use the data to determine leading journals.

382

Monday, 09:45 AM - 11:15 AM, A702

Track: Purchasing and Supply Management

Session: Modelling sourcing decisions I

Chair(s): Bernardo Quiroga

051-0230 Supplier Selection and Capacity Investments under Competition

Tarun Jain, Student, Indian Institute of Management Bangalore, India
Jishnu Hazra, Professor, Indian Institute of Management Bangalore, India

We analyze a situation with two suppliers and a single buyer. The suppliers simultaneously make capacity investment decisions. The buyer faces uncertain demand and reserves some capacity from one of these two competing suppliers through a bidding process and sources the rest from an open market.

051-0119 A Nonparametric Estimator for Score Auctions in Multi-attribute Procurement

Bernardo Quiroga, Student, Smeal College of Business, Chile

Governments use score-procurement auctions in an attempt to explicitly incorporate non-price attributes in their procurement decisions. We propose a nonparametric density estimator for multi-attribute procurement where bids are evaluated using a preannounced quasi-linear scoring rule, extending the standard two-step, nonparametric, sealed-bid-first-price estimator via the optimal-bidding strategy of the score auction.

051-0413 A Design of Allocation Mechanism of Scarce Capacity: Reserve and Trade

Ju Myung Song, Student, Supply Chain Management, United States
Yao Zhao, Associate Professor, Rutgers University, United States

Turn-and-earn depends on only sales history and assumes known demand. For unknown demand, we developed a general two-stage mechanism using reservation fee and trade. We found the conditions under which this mechanism design is more profitable for the manufacturer and the supply chain.

051-1274 Applying Predictive Global Sensitivity Analysis to Centralized Purchasing Decisions

Xiaohui Huang, Project Manager/Biostatistician, Axio Research, United States
Charles Munson, Professor, Washington State University Pullman, United States

We develop a global sensitivity analysis approach to provide managers with a tool to determine whether to purchase a new item centrally or locally, given a current system with multiple locations and partial centralization of purchased items. Key parameters are identified and aggregated to represent their relations to centralization decisions.

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Monday, 09:45 AM - 11:15 AM, A707

Track: Product Innovation and Technology Management

Session: Collaboration and Organizational Factors in Innovation

Chair(s): Suri Gurumurthi

051-0327 Being Innovative: Does Supply Chain Collaboration Really Lead to More Innovations?

Frank Wiengarten, Assistant Professor, Esade Business School, Spain
Cristina Gimenez, Associate Professor, Esade Business School, Spain
Annachiara Longoni, Assistant Professor, Esade Business School, Italy

The objective of this paper is to assess the importance of supply chain collaboration for a company's innovativeness. Furthermore, we take various company and country wide contextual variables into consideration. We utilize a European cross-country survey to test various hypotheses.

051-0913 Modularity and Risk Management in Collaborative Projects and Innovation Programs

Suri Gurumurthi, Lecturer, University of North Carolina Chapel Hill, United States

We demonstrate the role of modular task or product structures, and modular resource configurations, in managing risk in product development and innovation programs. We differentiate between task and resource modularity; and show for some environments that resource modularity can offer more effective hedging against time-to-market and cost risks.

051-1046 The Impacts of Connectedness and Psychological Safety on the Time Performance of Innovation Projects

Jung Young Lee, Assistant Professor, Northern Illinois University, United States
Morgan Swink, Professor, Texas Christian University, United States

This research aims to investigate two important social capital elements: connectedness and psychological safety. Using survey data from manufacturing companies in the U.S., this research empirically examines how these two elements influence the time performance of incremental innovation projects and radical innovation projects differently.

051-1067 The Benefit of Sharing New Process Technology with Yield Risk

Hiroki Sano, Student, University of Texas Austin, United States
Edward Anderson, Associate Professor, University of Texas Austin, United States

Motivated by collaborative process technology development alliances in the semiconductor industry, we develop a game-theoretic model to study a technologically leading manufacturer's strategy in terms of sharing a proprietary new process technology with rival firms. We characterize the leading manufacturer's strategy when the new process technology involves yield risk.

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Monday, 09:45 AM - 11:15 AM, L508

Track: Sustainable Operations*Session:* Life Cycle Analysis*Chair(s):* Flavio Junior**051-1395** Use of Life Cycle Assessment (LCA) for Selecting, Designing and Operating Wastewater Treatment Plants

Sheetal Kamble, Student, National Institute of Industrial Engineering, India
 Anju Singh, Associate Professor, National Institute of Industrial Engineering, India
 Itee Bawa, Student, National Institute of Industrial Engineering, India
 Prasad Khale, Student, National Institute of Industrial Engineering, India

LCA is a cradle-to-grave technique used to quantify the environmental and health impacts associated with all the stages of a product, service or process. This paper provides a critical review of 78 publications detailing the use of Life cycle assessment of waste water treatment plants as a product using 23 different treatment technologies. The review is focused on the relative importance of the different life cycle stages and the individual impact categories in the total impact from the wastewater treatment.

051-0144 Environmental Benefits Measured at Wuppertal Method on Disposal of Solid Waste Industry

Rosangela Vanalle, Professor, Universidade Nove De Julho, Brazil
 Carlos Franzini Filho, Student, UNINOVE, Brazil

The aim is to present alternatives for the disposal of solid waste and the environmental benefits. Data were collected from the internal indicators of the environmental management system from electromechanical industry. The results demonstrate a potential about underutilized resources and the practice of measuring the environmental impacts according Wuppertal method.

051-0322 The Study on Environmental Performance Optimization of Color TV Sets Supply Chain in China

Zhiduan Xu, Professor, Xiamen University, China
 Danxia Guo, Associate Professor, Xiamen University, China

Based on the color TV sets manufacturer as the focal company in the supply chain, this paper develops an environmental performance optimization model for a multi-tiered closed loop supply chain by means of life cycle assessment methodology from the ecological environment influence of the supply chain.

051-0244 Theoretical Discussion among the Methods of Production Possibility Curve and Life Cycle Assessment

Flavio Junior, Student, Universidade Tecnológica Federal do Parana, Brazil
 Cassia Ugaya, Professor, Universidade Tecnológica Federal do Parana, Brazil

This article aims to discuss the theoretical alignment between the Method of Production Possibility Curve and the Method of Life Cycle Assessment to identify key variables to measure and identify the environmental impacts throughout a product's life cycle.

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Monday, 09:45 AM - 11:15 AM, M101

Track: Information Systems*Session:* Business Intelligence and New Paradigms in Organizational IT*Chair(s):* Beatriz Munhoz**051-1300** Information Quality Assessment in Context of Business Intelligence System

Samuel Schmidt, Student, Universidade de Sao Paulo, Brazil
 Maria Gouvea, Associate Professor, Universidade de Sao Paulo, Brazil

This study identified the relevant Information Quality (IQ) dimensions in Business Intelligence (BI) system from user's perspective. A case study was conducted, through a sample of 170 individuals, in a big Brazilian financial company. Results highlighted twenty IQ dimensions that can be used by companies in evaluation of their IQ.

051-1050 An Overview About CI Strategic Alignment in Brazilian Companies

Olavo Cabral Netto, Student, Universidade De Sao Paulo, Brazil
 Fernando Laurindo, Associate Professor, Universidade De Sao Paulo, Brazil

Competitive Intelligence (CI) has emerged as a contribution to strategic management of companies. However, given the information overload, deploying CI programs requires strategic direction. This article discusses the alignment between strategy and CI and proposes a model to evaluate CI strategic alignment based on structural analysis in the industry.

051-0665 Google Analytics: Website Traffic Analysis in a Brazilian Journalistic Company

Beatriz Munhoz, Student, Universidade De Sao Paulo, Brazil
 Renato Moraes, Associate Professor, Universidade De Sao Paulo, Brazil

The Google Analytics has become an important tool to analyse the traffic in websites. This paper presents a Brazilian journalistic company that uses this tool to monitor the website to make some decisions, sell publicity and create some associations with other firms.

051-1152 SOMORe - System for Operations Management of Oil-producing Areas in Reactivation

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This work aims to propose a hybrid system that assists operations management in the production of oil and gas. From the identification of relevant variables for the operational management, propose a system that uses the concept of a set of techniques (Real Options, Utility Theory, Fuzzy Logic and Decision Tree).