Monday, 08:00 AM - 09:30 AM

533

Monday, 08:00 AM - 09:30 AM, Piscataway   Track: Emerging Topics in Operations Management

Contributed Session: Innovations in Manufacturing and Transportation

Chair(s): Devendra Pathak

093-1228   Modelling the Critical Success Factors for Adopting Smart Manufacturing Systems

monica shukla, Student, New Delhi India, India

Ravi Shankar, Professor, Indian institute of Technology Delhi IIT, India

Critical Success Factors (CSFs) for adopting Smart Manufacturing Systems are modelled using DEMATEL. The findings reveal the importance of having a system approach towards managing CSFs related to strategic, tactical, and operational aspects of business. The results provide useful insights regarding the driving power and dependence relationships among these CSFs.

093-1638   Revisiting Taxonomy of Manufacturing Firms: Service-Oriented Performers

Beata Seinauskiene, Associate Professor, Kaunas University of Technology, Lithuania

Ausra Rutelione, Associate Professor, Kaunas University of Technology, Lithuania

Mantas Vilkas, Associate Professor, Kaunas University of Technology, Lithuania

Inga Stankevice, Associate Professor, Kaunas University of Technology, Lithuania

Rimantas Rauleckas, Associate Professor, Kaunas University of Technology, Lithuania

The research aims to elaborate taxonomies of manufacturing organizations. Cluster analysis method was used on a representative sample of manufacturing firms of ES country (N=500). The results reveal the emerging type of "service-oriented performers" manufacturing firms that exhibit superior performance on service and digitalization capabilities.

093-2021   Are We Finally Done with the 'Human Element' in Industry 4.0?

Araz Zirar, Lecturer, Loughborough University, United Kingdom

Alok Choudhary, Reader, Loughborough University, United Kingdom

Mohammed Alkahtani, Assistant Professor, King Saud University, Saudi Arabia

Drawing on activity theory and interpretative phenomenological analysis, expert opinion suggests that we are still unclear on how to direct the human element that lurks behind the scene of Industry 4.0 in terms of inadequacy of skill-sets and qualification, constant redundancy threats, reluctance of stakeholders, and top management lack of commitment.

093-0457   3-D Maximal Covering Location Problem with Unimodal Coverage: Planar Case

Cihan Tugrul Cicek, Student, University of California Berkeley, United States

Zuo-Jun Max Shen, Professor, University of California Berkeley, United States

A novel location problem is introduced to enhance the application areas of maximal covering location problems. Assuming unimodal coverage, the problem is solved for 3-D space to exploit the use of emerging technologies like drones. Adding one dimension increases the complexity. Exact solution procedures are developed for two special cases.

093-1366   An Integrated Performance Assessment Model Based on Competitive Priorities for Sustainable Freight Transportation Systems

Devendra Pathak, Student, Indian institute of Technology Delhi IIT, India

Ravi Shankar, Professor, Indian institute of Technology Delhi IIT, India

Devendra Choudhary, Associate Professor, Government Engineering College, Ajmer, India

Freight transportation is one of the most essential and cost intensive activities within the growing logistics sector. In this study, we attempt to assess the critical success factors of sustainable freight transportation systems based on the competitive priorities by utilizing Fuzzy Evidential Reasoning Algorithm and Expected Utility Theorem.

534

Monday, 08:00 AM - 09:30 AM, Oak Lawn   Track: Marketing and Operations Management

Contributed Session: Empirical Research in Marketing and Operations Management

Chair(s): Sreejith Kumar Krishnakumar

093-1991   Identifying the 'Voice of the Customer' in the Express Logistics Industry in Indonesia

Chirag Naithani, Student, Stamford International University, Thailand

Rajavadivel Santhanakrishnan, Student, Stamford International University, Thailand

Kate Hughes, Senior Lecturer, Stamford Int. University in Bangkok, Thailand

Bhanupriya Parasar , Student, Stamford International University, Thailand

Express logistics relies on successful delivery of products, 'on time' and 'in full'. Systems in this sector provide little differentiation, with the most successful competitors in the marketplace being those that understand their customers. This study provides preliminary findings on the 'voice of the customer' in this sector, in Indonesia.

093-1747   Its Product-Quality, Stupid! Understanding the Determinants of the Actual Price Paid by Customers for Durable-Products

Ramesh Roshan Das Guru, Student, University of Geneva, Switzerland

Marcel Paulssen, Professor, University of Geneva, Switzerland

The link between customer-satisfaction, product-quality and other predictors on the "actual-price" paid for a product/service remains unexplored. In a longitudinal-study of US customers across diverse product-categories, we establish that product-quality is the only key-driver of the actual price paid by customers. Boundary conditions for the relevance of quality are identified.

093-1663　Customers' Experienced Product-Quality: A Multidimensional Measure of Product-Quality Predicting Repurchase-Behavior for Operations and Marketing-Managers

Ramesh Roshan Das Guru, Student, University of Geneva, Switzerland

Marcel Paulssen, Professor, University of Geneva, Switzerland

A multidimensional, theory-consistent, product-quality measure is developed which explains customers' true repurchase behavior better than other established metrics such as satisfaction or brand attachment in a longitudinal study of the US-customers across several product categories. Boundary conditions of the product-quality -> repurchase link are also proposed and validated.

093-0788　Executive Attention as an Antecedent of Firm Omnichannel Adoption

Sreejith Kumar Krishnakumar, Student, Suny At Buffalo, United States

Nallan Suresh, Professor, Suny At Buffalo, United States

Rajiv Kishore, Professor, University of Nevada Las Vegas, United States

We examine CEO attention to customer service as an antecedent of firm adoption of omnichannel retail strategy. Using letter to shareholders of Fortune 500 Retail firms, we construct a dictionary of words associated with customer service. We use established measures for omnichannel capability (Bendoly et al. 2005).

535	Monday, 08:00 AM - 09:30 AM, Northwest　　　　　　　　Track: Social Media and Internet of Things Invited Session: O2O Commerce Chair(s): Jiafu Tang

093-2419　A Vehicle Routing Problem Considering Order Priority in O2O E-Commerce

Tian Tian, Associate Professor, Dongbei University of Finance and Economics, China

Tang Jiafu, Professor, Dongbei University of Finance and Economics, China

We investigate a new type of vehicle routing problem emerging from the O2O e-commerce, in which, order priority constraint must be satisfied in each route. A tabu search algorithm embedded with a priority control operation is developed. Its performance is demonstrated by one-year data from a Chinese O2O e-commerce company.

093-2420　A New Kernel-Free SVR Approach for Forecasting Hierarchical Customer Demands in an O2O Takeaway Platform

Jian Luo, Associate Professor, Dongbei University of Finance & Ecnomics, China

Zhiyao Zhang, Student, Dongbei University of Finance and Economics, China

Tang Jiafu, Professor, Dongbei University of Finance and Economics, China

This study proposes a kernel-free quadratic surface SVR approach for forecasting hierarchical customer demands in O2O platform. From Baidu Takeaway data, customer value features are also constructed via customer relationship management, to utilize fuzzy C-means for clustering customers into four levels. Preliminary results validate the superior performance of proposed approach.

093-2426　Optimal In-Store Inventory Policy for Omnichannel Retailers

Jianjun Xu, Associate Professor, Dongbei University of Finance & Ecnomics, China

Lanlan Cao, Professor, NEOMA Business School, France

We study store replenishment and allocation problems in the context of an omnichannel retailer in a franchise network. We show that the optimal replenishment policy is a base-stock policy and the optimal allocation level is non-decreasing on the base-stock level.

093-2421　Setting Service Quality Levels for IDSPs: An Integrated Marketing-Operations Perspective

Xiaobing Li, Associate Professor, Dongbei University of Finance & Ecnomics, China

Wei Jiang, Professor, Shanghai Jiao Tong University, China

Instant delivery service platforms (IDSPs) have increasingly been competing for market share on the basis of delivery time. Many IDSPs now choose to set the same delivery time commitment without considering different products and heterogeneous customers. A gap model is proposed to choose a delivery-time commitment maximize its market share.

538	Monday, 08:00 AM - 09:30 AM, Jay　　　　　　　　　　Track: Emerging Topics in Operations Management Invited Session: Sharing Economy and Last-Mile Delivery Chair(s): Soraya Fatehi

093-0468　Shared Mobility for Last-Mile Delivery: Design, Operational Prescriptions, and Environmental Impact

Wei Qi, Assistant Professor, Mcgill University, Canada

Lefei Li, Associate Professor, Tsinghua University, China

Sheng Liu, Student, University of California Berkeley, United States

Zuo-Jun Max Shen, Professor, University of California Berkeley, United States

The booms in the sharing economy and retail e-commerce lead to the prospect where shared mobility of passenger cars prevail throughout urban areas for home delivery services. This paper evaluates this prospect by providing new logistics planning models and managerial insights.

093-0469　Data-Driven Order Assignment for Last-Mile Delivery

Sheng Liu, Student, University of California Berkeley, United States

Long He, Assistant Professor, National University of Singapore, Singapore

Zuo-Jun Max Shen, Professor, University of California Berkeley, United States

We study how real-world delivery data can be applied to improve on-time performance in last-mile delivery services. A data-driven framework is proposed to model the delivery performance and optimize the order assignment decision. Our results indicate the importance of learning drivers' behaviors from the operational data.

093-0459   Crowdsourcing Last-Mile Deliveries

Soraya Fatehi, Student, Foster School of Business, United States

Michael Wagner, Professor, Foster School of Business, United States

We propose and analyze a new dynamic model of crowdsourcing last-mile deliveries for fast on-demand orders. Our objective is to find the minimum cost allocation of package deliveries between crowdsourcing and a third-party logistics firm, subject to delivery timing, routing capacity, and queue stability constraints.

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539   Monday, 08:00 AM - 09:30 AM, Holmead East   Track: Global Supply Chain Management

Contributed Session: Global Supply Chain Configuration

Chair(s): Zhijiao Du

093-0982   FTZs and Production Networks: Supplier Relationships as Value Capture Strategies

Ricardo Martins, Professor, Federal University of Minas Gerais, Brazil

Janaina (Jane) Siegler, Assistant Professor, Butler University/Andre Lacy School of Business, United States

Guilherme Martins, Professor, Insper/Institute of Education and Research - Brazil, Brazil

This study investigates the way firms reconfigure their supply base and reshape their production network to capture value from Free Trade Zone incentives. Based on the analysis, we propose five propositions that challenge the relationships among autonomy, value creation, plant types, and levels of embeddedness.

093-1020   The Strategic Interplay Between Parallel Importation and Technology Licensing

Hai Li, Associate Professor, Zhongnan University of Economics and Law, China

We develop a game-theoretic model to examine the strategic interplay between parallel importation and technology licensing. By considering that the high market is in a monopoly, and in a duopoly respectively, we investigate the impact of gray markets on the profits of players and the unit licensing fee.

093-0120   The Effect of Voice Fluctuation and Environmental Context in Supply Chain Management Communication

Leticia Carvalho, Student, University of Washington, United States

Dan Bumblauskas, Associate Professor, University of Northern Iowa, United States

The ability to effectively communicate worldwide due to language, time, and environmental constraints impacts efficiency. This article explores how communication also directly affects verbal contract agreements between the U.S and China. We will discuss the flow of information and how to ease communication turmoil within global supply chains.

093-0115   Improved FMEA-Based Risk Assessment Approach Involving Conflict Risk: An Application to Overseas Production Base Selection

Zhijiao Du, Student, Sun Yat-sen University, China

Zhixiang Chen, Professor, Sun Yat-Sen University, China

The choice of overseas production base is a strategic and complex managerial decision. We provide an improved FMEA-based risk assessment approach to addressing this choice decision, which takes into account the conflict risk. Conflict risk originates from different preferences about an issue caused by people's cognitive differences.

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540   Monday, 08:00 AM - 09:30 AM, Holmead West   Track: Retail Operations

Invited Session: Omni-channel operations

Chair(s): Manuel Ostermeier

093-0746   Using Omni-Channel Sales Data Analytics to Decide Between Store and Distribution Center Fulfillment Options

Jingran Zhang, Assistant Professor, Lewis College of Business, United States

Sanchoy Das, Professor, New Jersey Inst of Technology, United States

Brick-and-mortar retailers fulfill online customer orders in two ways: Buy Online Fulfill from Store (BOFS) or Fulfill from Distribution Center (FDC). A real-time fulfillment decision is made by forecasting the value of disperse inventory based on omni-channel sales to maximize the revenue of the store inventory and enhance order fulfillment.

093-0480   Customer Behavior Under Risk: Evidence from Online Grocery Retail

Ana Pinto, Student, Universidade do Porto/Faculdade de Engen, Portugal

Pedro Amorim, Assistant Professor, INESC TEC and Faculty of Engineering, UP, Portugal

We model the impact of failure-related risk on online grocery shopping based on Prospect Theory and other behavioural insights. We find that failure events impact costumer spendings negatively, with up to 40% less spendings due to recent failures. We further note that frequency and platform usage reduce risk sensibility.

093-2198   Designing Store Replenishment and Fulfillment Strategy for an Omnichannel Retailer

Walid Klibi, Associate Professor, Kedge Business School, France

Bayrem Tounsi, Post Doc/Researcher, KEDGE Business School, France

This work deals with the order fulfillment problem of an omnichannel retailer. It presents a two-stage stochastic modeling approach to maximize the retailer profit under demand uncertainty. The model designs the inventory replenishment and allocation decisions of stores subject to daily orders, and to limited preparation and storage capacity.

093-0475   Omni-Channel Grocery Retailing: An Approach for Multi-Depot Order Fulfillment

Manuel Ostermeier, Post Doc/Researcher, TU Munich, Germany

Alexander Hübner, Professor, TU Munich, Germany

Christian Dethlefs, Student, TU Munich, Germany

Omni-channel retailing is a major challenge for retailers as new options for order fulfillment have to be considered. We therefore examine which order fulfillment concept should be used to process orders in a cost efficient way, i.e., if orders should be processed directly in stores or in warehouses and intermediates.

541

Monday, 08:00 AM - 09:30 AM, Gunston East Track: Purchasing and Supplier Management

Contributed Session: Supplier capabilities for quality and sustainability

Chair(s): Liang Chen

093-1147 Lean Supply Management: Advancing a CTPs-Based Capabilities: Conceptualization and Theorization

Fernando Naranjo, Student, Ivey Business School, Western University, Canada
Larry Menor, Associate Professor, Ivey Business School, Western University, Canada
P. Fraser Johnson, Professor, Ivey Business School, Western University, Canada

We present a novel contingencies-based conceptualization of lean supply management (LSM) that considers the nature of supply challenges and functioning objectives in modeling the association between lean management practices and supplier performance. Our LSM model's theorization posits that incorporating these contingencies is critical to achieving productive supplier operational capabilities.

093-0061 Best Practices for Problem Resolution: An Analysis of Supplier Methods for Resolving Quality Issues

Rebecca Clemons, Assistant Professor, Indiana University, United States
Swathi Baddam, Assistant Professor, Purdue Fort Wayne, United States

Supply chain problems continue to impact firm performance. This research seeks to understand what makes for a good supplier. Using firm data, the analyst seeks to understand what good suppliers do differently. The findings provide insight into best practices for problem resolution.

093-2293 Can the Carbon Trading Scheme Drive Low Carbon Supplier Selection?

Chen WANG, Post Doc/Researcher, University of Science and Technology Beijing, China
Wei Gu, Associate Professor, University of Science and Technology Beijing, China
Shufen Dai, Professor, University of Science and Technology Beijing, China

A mixed integer programming model is presented for low-carbon supply chain management under the carbon trading scheme. We analyze the sensitivity of carbon embedded in raw materials on supplier selection under different carbon quota constraint strengths. A tighter carbon policy is proved necessary to drive Chinese companies to select low-carbon suppliers.

542

Monday, 08:00 AM - 09:30 AM, Gunston West Track: Next Generation Operations

Contributed Session: Information Visibility and Blockchains

Chair(s): Sven Reimers

093-0890 Blockchain & Smart Contract: A New Platform for Supply Chain-Based Processes

Naveen Undrallla, Student, Calicut, India
Madhusudanan Pillai, Professor, National Institute of Technology Calicut, India

In this paper, we see how blockchain smart contracts can leverage the ease and authenticity of business transactions between two parties in supply chain. The paper also focuses on decentralization of a traditional agreement or contract, its execution, and how a single version of supply chain truth can be obtained.

093-1669 Blockchain and its Distruptive Influence in the Financial Industry

Jing Liu, Student, Qinghua University, China
Tao Huang, Professor, Peking University, China

In this article, we first provide a brief overview of Blockchain Technology. Then, basing on current Fintech background, point out some potential applications of it in financial sector, such as Supply Chain Finance, Payment and Settlement, Digital Bill and Credit-Solicitation Management, etc.

093-1721 The Potentials of Blockchain Technology for Reducing the Bullwhip Effect in Supply Chains

Christian Wankmüller, Assistant Professor, Universitaet Klagenfurt, Austria
Gerald Reiner, Professor, WU Vienna, Austria

Blockchains have the potential to facilitate secure information exchange and to enhance trust in supply chains. Intensified information exchange about critical demand information between partners contributes to preventing the bullwhip effect, i.e. stocks are gradually increased along supply chains. We analyze the potential of blockchain technology to reduce this effect.

093-1799 Blockchain for Container Release in Hamburgs Harbor

Sven Reimers, Student, Hamburg University of Technology, Germany
Niels Hackius, Student, Hamburg University of Technology, Germany
Wolfgang Kersten, Professor, Hamburg University of Technology, Germany

Blockchain technology is on its way to fundamentally change many industries. We analyze the technical realization of Blockchain in the third largest port of Europe, reporting first empiric findings about requirements for logistics companies and upcoming changes to their IT landscape.

543

Monday, 08:00 AM - 09:30 AM, Fairchild East Track: Sustainable Operations

Contributed Session: Sustainability and Risk Management

Chair(s): Henry Aigbedo

093-0545 Supplier Sustainability Risk and Dealing with Non-Market Stakeholder Attacks

Sara Hajmohammad, Assistant Professor, University of Manitoba, Canada

Stephan Vachon, Associate Professor, University of Western Ontario, Canada

Buying organizations are increasingly attacked by non-market stakeholders (e.g., NGOs) for their suppliers' questionable practices regarding social and ecological issues. Using a vignette-based experiment methodology, this study explores buyers' diverse responses to such attacks and the influential decision factors such as stakeholders' salience and ideology and buyers' reputational standing.

093-1519   An Exploratory Study of the Relationship Between Environmental Risks and Environmental Performance

Henry Aigbedo, Associate Professor, Oakland University, United States

Firms with high environmental risks may perform poorly environmentally. However, an understanding of such risks may make some firms put in the needed efforts to do well environmentally. We explore the extent to which a firm's environmental risks may influence its environmental performance.

544

Monday, 08:00 AM - 09:30 AM, Fairchild West   Track: Socially Responsible Operations

Contributed Session: Managing Social Responsibility II

Chair(s): Sandeep Srivathsan

093-1405   Building Trust in Non-Traditional Peer-to-Peer Marketplaces

Mike Gordon, Student, University of Pittsburgh, United States

We examine lending-based crowdfunding transactions to determine the information that potential lenders use to overcome the lack of traditional credit information of their users and place trust in a potential borrower.

093-1875   Workforce Planning with Order-Picking Assignments in Distribution Facilities

Arpan Rijal, Student, Erasmus University Rotterdam, Netherlands

Marco Bijvank, Assistant Professor, University of Calgary, Canada

Asvin Goel, Professor, Kuehne Logistics University, Germany

René De Koster, Professor, Rotterdam School of Management, Netherlands

Warehouses often employ flexible order-pickers with flexible starting times and shift lengths. When orders have temporal restrictions, the planning of these flexible personnel is non-trivial. Results show that warehouse managers can offer larger minimum payments to order pickers in return for more flexible shift starting times without financial sacrifice.

093-1219   Technology-Enabled Abatement of Highway Accidents in India

Sandeep Srivathsan, Assistant Professor, Great Lakes Institute of Management, India

Sriram Rajagopalan, Assistant Professor, Great Lakes Institute of Management, India

Nachiketas Nandakumar, Senior Lecturer, Great Lakes Institute of Management, India

India contributes around 10% of the accidents around the world, thereby shrinking their GDP by 3%. We conduct a survey-based investigation on the use of technology-enabled infrastructure (e.g., Advanced Driver Assistance Systems, self-explaining roads) to streamline the vehicular movement. Our research holds potential public policy implications.

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Monday, 08:00 AM - 09:30 AM, Embassy   Track: Finance and Operations Management

Contributed Session: Cash Conversion, Trade Credit & Angel Investors

Chair(s): Yi Lu

093-0087   A Study on Investment Decisions of Angel Investors of Indian Start-Ups

A Rani, Student, IITM, India

Thillai Rajan Annamalai, Professor, Indian Institute of Technology Madras, India

Angel investors' primary source of capital at the early stage of start-ups where the perceived risk is very high are heterogeneous in nature. Their investment decisions varies tremendously to cater to the risks. This paper studies the demographic, geographic, psychographic, and behavioral factors that influence their investment decisions.

093-1284   Cash Conversion Cycle and the Zone of Concern

Joyaditya Laik, Student, University of Pittsburgh, United States

Prakash Mirchandani, Professor, University of Pittsburg, United States

The Cash Conversion Cycle (CCC) is a popular metric that measures cash generating efficiency and operational leanness. It is often used to benchmark firm performance. We show that an inferior performance (higher CCC) may really be due to an unfavorable fiscal cycle, seasonality, or sales growth rate which remains overlooked.

093-1265   Impact of Cash Conversion Cycle on Supply Chain Performance

Shaunak Dabadghao, Assistant Professor, Technische Universiteit Eindhoven, Netherlands

Maximiliano Udenio, Assistant Professor, KU Leuven, Belgium

Working capital management of a firm affects not only its own performance, but also that of its supply chain partners. We use the Compustat customer segment database to construct buyer-supplier dyads and empirically determine how firms' practices affect the profitability of its supply chain partners.

093-0193   Trade Credit, Financial Leverage, and Credit Rating

Shih-Sian (Sherwin) Jhang, Assistant Professor, Department of Finance , Taiwan, Republic of China

JUI TING HSU, Student, National Sun Yat-sen University, Taiwan, Republic of China

I-Hsuan Fang, Student, National Sun Yat-Sen University, Taiwan, Republic of China

Wen-Yuan Chen, Student, National Sun Yat-Sen University, Taiwan, Republic of China

We examine the relationship between short-term financing from suppliers and long term financing from financial intermediaries. Utilizing the COMPUSTAT database, we adopt a simultaneous equation system to analyze the aforementioned relationship for U.S. manufacturing firms from 1980 to 2016.

093-1329   Operational Decision for Supplier: Revenue-Sharing Contract or Trade Credit?

Yi Lu, Student, Peking University, China
Lihua Chen, Professor, Peking University, China

A specially-designed revenue-sharing contract provided by suppliers allows retailers to sell goods at a very low cost and earn a proportion of the revenue. Would it be an alternative for financing retailers compared with trade credit? A model is used to explicitly analyze the adopted condition for the contract.

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Monday, 08:00 AM - 09:30 AM, Du Pont   Track: Revenue Management and Pricing

Contributed Session: Capacity and Pricing

Chair(s): XIAOYU YANG

093-2041   Finite-Horizon Decomposition for an Infinite-Horizon Dynamic Capacity Allocation Problem

Thomas Vossen, Associate Professor, University of Colorado Boulder, United States
Rui Zhang, Assistant Professor, University of Colorado Boulder, United States

A rolling-horizon dynamic capacity allocation problem can be formulated as an infinite-horizon discounted cost Markov decision process. We show that the problem can be decomposed by the resources over the booking horizon. The solutions provide upper bounds and can be used to construct heuristic control policies. Computational results are discussed.

093-0169   Technology Choice and Pricing in a Duopoly with Heterogeneous Customers

Jagan Jacob, Student, University of Rochester, United States
Harry Groenevelt, Associate Professor, University of Rochester, United States

Manufacturers often release newer versions of products with functional and design upgrades. We consider a static profit-maximization problem in a duopoly market with heterogeneous customers. The manufacturers decide how much technology to incorporate in the next-generation, along with the price and trade-in discount to offer.

093-1216   Data Driven Models for Multi-Product Dynamic Pricing in Logistics

ShiJi Qiao, Algorithm Engineer of Operation Research, SF Technology Ltd. Co., China
ZhongWei Yao, Algorithm Engineer, SF Technology Ltd. Co., China
Dongjie ZHANG, Artificial intelligence engineer, SF Technology Ltd. Co., China
XIAOYU YANG, MACHINE LEARNING ENGINEER, SF Technology Ltd. Co., China
Xiaolong Yao, Director of The Big Data and Block Chain R&D Center, SF Technology Ltd. Co., China

Providing rational price for multiple products is one of the major concerns of a logistic company. Our study tries to model the relations between market response, cost and price, and builds them into an integrated model, which gives optimal pricing scheme by solving NLP and MILP problems.

093-1516   The Discount Elasticity Analysis of Shipping Demand for Logistics Service

XIAOYU YANG, MACHINE LEARNING ENGINEER, SF Technology Ltd. Co., China
YUE SUN, DATA ANALYST, SF Technology Ltd. Co., China
ShiJi Qiao, Algorithm Engineer of Operation Research, SF Technology Ltd. Co., China
YING WANG, MACHINE LEARNING ENGINEER, SF Technology Ltd. Co., China
Xiaolong Yao, Director of The Big Data and Block Chain R&D Center, SF Technology Ltd. Co., China

In this paper, we develop a strategy to analyze discount elasticity on shipping revenue and volume of logistics service. To test our propositions, we examine our model using various types of customers which are selected using machine learning methods based on features related to customers' business nature and shipping history.

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Monday, 08:00 AM - 09:30 AM, Cardozo   Track: Economics Models in Operations Management

Contributed Session: Contract design and management

Chair(s): Anna Devlin

093-2227   Contracting and Demand Acquisition to Assure Supply: The Role of Private Capacity Information

Xiaoyu Shen, Assistant Professor, Chongqing University of Posts and Telecommunications, China
George Zhang`, Professor, Western Washington University, United States

Contingent on the to-be-acquired demand information, a manufacturer orders from a supplier possessing private initial capacity information by offering two-part tariff contracts menu. We find that the manufacturer's demand acquisition may not significantly weaken the distortion effect of upstream private information on capacity, and the supplier may also suffer.

093-2273   Impact of Management Type on the Adoption of Revenue Sharing for Medical Treatments

Yu-Hung Chen, Assistant Professor, National Taiwan University, Taiwan, Republic of China
Ling-Chieh Kung, Assistant Professor, National Taiwan University, Taiwan, Republic of China
Jiun-Yu Yu, Assistant Professor, National Taiwan University, Taiwan, Republic of China
Hsin-Jung Tsai, Doctor, Mackay Memorial Hospita, Taiwan, Republic of China
Yu Jen Wang, Lecturer, Fu Jen Catholic University, Taiwan, Republic of China

We study the contracting problem between an equipment vendor and a hospital for medical treatment since the equipment reliability information is privately possessed only by the vendor. We show that the popular revenue-sharing contract can serve as a signaling device and enhance the system efficiency, especially for non-profit hospitals.

093-2220   The Impact of Shareholding among Enterprises on Supply Chain Decisions Under Different Emission-Reduce Contracts

Xuping Wang, Professor, Dalian University of Technology, China
Wenping Fan, Student, Dalian University of Technology, China
Ya Li, Student, Dalian University of Technology, China

Two models that a manufacturer holds equity in an Energy Service Company in the emission reduction benefit-sharing contract and the emission reduction guarantee contract are respectively established. Then, the impact of shareholding strategies under the two different emission reduction contracts on supply chain enterprises decision-making and profits is analyzed.

093-1961   Online Piracy in Two-Sided Markets

Sungjune Park, Professor, University of North Carolina Charlotte, United States
Kilhwan Kim, Associate Professor, Sangmyung University, South Korea

In this paper, we consider a two-sided market model, where the profit of a platform provider is determined by the prices of the content market and advertising market as well as the level of pirated contents.

093-2286   Contracts Between Landlords and Property Managers: Incentivizing Effort to Find High Quality Renters

Anna Devlin, Assistant Professor, Drexel University, United States
Jatinder Gupta, Professor, University of Alabama Huntsville, United States

Contracts between landlords and property managers often incentivize appropriate short-term behavior from the PM that's in direct conflict with the landlord's long term profits. We build an analytical model to investigate how contract terms should be set to incentivize appropriate effort from PM and maximize a landlord's long-term profits.

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Monday, 08:00 AM - 09:30 AM, Columbia 1   Track: Scheduling and Logistics

Contributed Session: Urban Logistics

Chair(s): Jianhua Yang

093-1976   Flying Taxis: The Future of Urban Mobility

Eric Oden, Student, University of Maryland, United States
Bruce Golden, Professor, University of Maryland, United States
S. Raghavan, Professor, University of Maryland, United States

There is a significant interest in designing on demand air taxi services (e.g., Lilium, Uber, Volocopter) to improve urban mobility. We discuss several facility location, routing, and scheduling problems that arise in this setting. We present models and solution methods and discuss our computational experience.

093-0999   Research on Traffic Congestion Characteristics in Beijing

rui zhao, Student, Peking University, China
Lihua Chen, Professor, Peking University, China
huaqing Hu, Student, University of Science and Technology Beijing, China

We collected data on 90 main roads in Beijing for 90 days. Through a k-means cluster analysis method, the time characteristics, spatial characteristics, spatial-temporal characteristics, and the causes of occurrence are analyzed. Finally, the proposal of congestion management is put forward.

093-0025   Research on Cooperative Strategy of Urban Logistics Enterprises for Social Welfare Effect

Jianhua Yang, Professor, University of Science and Technology Beijing, China
Huijie Gao, Student, Tsinghua University, China

Taking a large-scale and a small-scale functional road freight logistics provider with door-to-door, and a multi-level mass functional logistics service provider with collection into account, an optimal cooperative strategy among different types of functional logistics service providers in a large city is studied to gain social welfare effect.

550

Monday, 08:00 AM - 09:30 AM, Columbia 2   Track: Operational Excellence

Contributed Session: Process improvement

Chair(s): Michael Gorman

093-1632   Maintenance Practices and Overall Equipment Effectiveness (OEE): A Longitudinal Perspective

André Duarte, Professor, Insper, Brazil
Marcia Scarpin, Student, Indiana University, United States
André Silva, Student, Insper, Brazil

This work aims to understand how the effectiveness of production lines in an industrial environment is impacted by different maintenance practices: corrective, preventive and predictive. The methodology used was a panel with fixed effects for 29 plants during 21 months. The moderating effect of training practices was also observed.

093-0778   Re-Examining the Concept of Non-Value Adding Activity in Knowledge Work

Francis Gleeson, Post Doc/Researcher, University College Dublin, Ireland
Vincent Hargaden, Associate Professor, University College Dublin, Ireland
Paul Coughlan, Professor, Trinity College Dublin, Ireland

Lizbeth Goodman, Professor, University College Dublin, Ireland

The seven wastes, associated with Lean Manufacturing, are problematic to apply beyond tractable manufacturing processes. Using four cases studies of complex work, this paper examines different approaches to identify value adding activity leading to a proposal for waste reduction in complex and highly automated manufacturing environments.

093-1353   Analytics in Research and Practice: Finding Common Ground

Michael Gorman, Professor, University of Dayton, United States

Academic research can be inaccessible and impractical. Real-world problems are messy. I describe the gap between theoretical and practical problem solving and suggest ways to bridge that gap. My hope is that these thoughts will help to create a closer academic-practitioner relationship.

551

Monday, 08:00 AM - 09:30 AM, Columbia 3   Track: Scheduling and Logistics

Contributed Session: Routing and Scheduling in Urban Areas

Chair(s): Matthias Winkenbach

093-1038   The Technician Routing and Scheduling Problem in Congested Urban Areas

Fabián Castaño, Post Doc/Researcher, Universidad de los Andes, Colombia
Andrés Felipe Gutierrez-Bonilla, Student, Universidad De Los Andes, Colombia
Nubia Velasco, Associate Professor, Universidad De Los Andes, Colombia
Ciro Amaya, Associate Professor, Universidad de los Andes, Colombia

This work studies a version of the technician routing and scheduling problem in which travel time depends on departure time. A data-based approach is followed to construct an accurate model of travel times. Moreover, an approximate MIP model and a Memetic Algorithm are proposed for solving the problem efficiently.

093-1678   An Online Intelligent Vehicle Routing and Scheduling Approach for B2C E-Commerce Urban Logistics Distribution

Haiyang Shi, Student, Dalian University of Technology, China
Lijun Sun, Associate Professor, Dalian University of Technology, China
Xiangpei Hu, Professor, Dalian University of Technology, China

We investigate a large-scale vehicle routing and scheduling problem of B2C e-commerce urban logistics distribution in China. A qualitative and quantitative combined online intelligent approach is developed by means of incorporating operations research methods and artificial intelligence technologies. A case study from a Chinese e-commerce company demonstrates its effectiveness.

093-0425   Analyzing Joint Collection and Delivery Vehicle Routes in an Urban E-Commerce Distribution System

Felix Bergmann, Student, Swiss Federal Institute of Technology Zurich, Switzerland
Stephan Wagner, Professor, Swiss Federal Institute of Technology Zurich, Switzerland
Matthias Winkenbach, Assistant Professor, Massachusetts Institute of Technology, United States

We investigate route efficiency trade-offs emerging from integrating collection and delivery operations in urban e-commerce distribution. We extend the literature on continuum approximation-based route length estimation by first analytically deriving adjustment factors accounting for the effects of integrated collection and delivery operations, and then refining them via comprehensive numerical experiments.

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Monday, 08:00 AM - 09:30 AM, Columbia 4   Track: Healthcare Analytics

Contributed Session: Prediction and Classification: Health Outcomes and Treatment

Chair(s): Mark Van Oyen

093-1402   Predicting Healthcare Adverse Events Using Data Stream Models

Jozef Zurada, Professor, University of Louisville, United States
Donghui Shi, Professor,   Anhui Jianzhu University, China
Jian Guan, Associate Professor, University of Louisville, United States
Sandeep Goyal, Associate Professor, University of Louisville, United States
Waldemar Karwowski, Professor, University of Central Florida, United States

Data stream models can analyze large data using limited memory and time, while provide high-quality predictions. 101 attributes and 33,600 healthcare records were analyzed using data stream models to predict healthcare adverse events. The results show that data stream models provide better results than traditional machine learning methods.

093-1920   Low Risk Is Not Always Negligible: Predicting Adverse Events in Low-risk Surgeries Using Bayesian Analysis

Maryam Torabi, Student, University of Cincinnati, United States
Elham Torabi, Assistant Professor, James Madison University, United States

Healthcare professionals seldom consider routine low-risk ambulatory surgeries worthy of perioperative precautions. Employing Bayesian statistics, we show that some low-risk surgery cases pose grave danger of adverse events that may lead to preventable deaths. Then, we develop a Bayesian model to predict such adverse events in low-risk surgeries.

093-2337   Disease Modeling and Machine Learning for Dynamic Surveillance and Monitoring of Patients: Lessons From Glaucoma

Mark Van Oyen, Professor, Industrial & Operations Engr., United States
Isaac Jones, Student, Industrial & Operations Engr., United States
Esmaeil Keyvanshokooh, Student, University of Michigan - Ann Arbor, United States
Mariel Lavieri, Associate Professor, University of Michigan - Ann Arbor, United States
Joshua Stein, Associate Professor, University of Michigan - Ann Arbor, United States

Monday, 08:00 AM - 09:30 AM

Chronic diseases require the identification of the times/visits at which patients are about to experience progression. Landmark clinical trials data with test results over time support our data-driven prediction and decision/control approaches, including Kalman filters, novel machine learning, and online learning models. We present various approaches.

553

Monday, 08:00 AM - 09:30 AM, Columbia 5   Track: Healthcare Operations Management

Contributed Session: Empirical Healthcare Operations I

Chair(s): Esmaeil Keyvanshokooh

093-1651   Identifying KPI's by Using Text Mining of Administrative Board Documents in Norwegian Hospitals

Berit Irene Helgheim, Associate Professor, Molde University College, Norway
Birgithe Sandbek, Associate Professor, Molde University College, Norway
Aravazhi Agaraoli, Student, Molde University College, Norway

This paper analyzes 36,000 documents by using text mining from board meetings in hospitals in Norway in the period 2008-2017. The purpose is to explore which subjects are emphasized and identify changes in strategic focus during the time span.

093-0684   Does Announcing the Visit Matter? An Empirical Examination in US Nursing Homes

Sehwon Kang, Student, University of Minnesota, United States
Rachna Shah, Associate Professor, University of Minnesota, United States
Kevin Linderman, Professor, University of Minnesota, United States

Practitioners have debated the value of announced versus unannounced strategies. This study empirically investigates the effect of announced and unannounced inspections on the immediate and sustained effect on quality performance in nursing homes. The analysis shows that unannounced inspections lead to more sustained quality performance when compared to announced visits.

093-0283   Admit or Send Home? Accelerated Decision Making in a Hospital Observation Unit

Paulo Gomes, Assistant Professor, Florida International University, United States
Tala Mirzaei, Assistant Professor, Florida International University, United States

The decision to admit a patient is a complex medical judgment with significant financial implications regarding reimbursement and cost. Physicians have to make timely decisions without compromising the quality of care. Using patient-level data, we assess the impact of implementing agile decision-making on the speed and quality of admission/discharge decisions.

093-2324   Managing Coordinated and Priority-Based Care in Clinical and Surgical Suites Under Integrated Uncertainty

Esmaeil Keyvanshokooh, Student, University of Michigan - Ann Arbor, United States
Pooyan Kazemian, Student, Harvard University, United States
Mark Van Oyen, Professor, University of Michigan, United States

Providing timely access to care is crucial for patients with high acuity diseases. In this paper, we present an integrated multi-stage stochastic and distributionally robust optimization approach for coordinating both clinic and surgery appointments to meet access delay service levels. The methodology is applied to historical hospital data.

554

Monday, 08:00 AM - 09:30 AM, Columbia 6   Track: Healthcare Operations Management

Contributed Session: Blood and Pharmaceutical Supply Chain

Chair(s): Karti Puranam

093-1440   Analysis of Mergers and Acquisitions in Blood Banking Industry: A Supply Chain Network Model

Amir Masoumi, Assistant Professor, Manhattan College, United States
Min Yu, Associate Professor, University of Portland, United States
Jan Hoffmann, Student, Eberhard Karls University of Tübingen, Germany

We utilize a supply chain network model to analyze a recent case of merger between two blood banks in California. The synergy associated with this merger is evaluated in terms of total cost, as well as the shortage and surplus of blood units in the demand points.

093-2004   Issuing Policies for Inventory Management of Red Blood Cells in Hospitals

Alireza Sabouri, Assistant Professor, University of Calgary, Canada
Tim Huh, Professor, Sauder School of Business, UBC, Canada
Steven Shechter, Associate Professor, Sauder School of Business, UBC, 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. Based on our analysis, we design efficient issuance policies and evaluate their performance.

093-1344   Bridging the Gap Between Theory and Practice: An Ordering Heuristic for Blood with Random Redistribution

David Novak, Associate Professor, University of Vermont, United States
Marilyn Lucas, Associate Professor, University of Vermont, United States
Karti Puranam, Assistant Professor, Rutgers University, United States

The primary objective of this research is to develop a practitioner-focused, easy-to-implement ordering heuristic to address the random transfer of blood via redistribution. Here, we present results of detailed sensitivity analyses which should provide practitioners with ordering guidance given the potentially high degree of uncertainty in some cost parameters.

Monday, 08:00 AM - 09:30 AM

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Monday, 08:00 AM - 09:30 AM, Columbia 7   Track: Supply Chain Management

Contributed Session: Supply Chain Management in Specific Industries

Chair(s): Ahmed Timoumi

093-0105   Evaluating Sri Lanka's Perishable Cold Chain to Increase Rural Supply to Urban Markets

Keshala Wickrama Gunaratne, Student, Sri Lanka, Sri Lanka

Pradeepa Jayaratne, Senior Lecturer, University of Moratuwa, Sri Lanka

Cold Chain has become an increasingly prevalent segment in global supply chain to move perishables under temperature controlled environments. This research aims to find out the most influential factors for cold chain efficiency in developing countries and relationship among them in terms of cost and quality aspects.

093-1444   Supply Chain 4.0: Lessons Learned From the Petrochemical Industry

Ann Vereecke, Professor, Vlerick Business School, Belgium

Digitization is changing supply chains rapidly, yet some industries are impacted sooner than others. Through case research and survey research, we investigate the digital maturity of the petrochemical supply chain and identify the readiness with manufacturers and logistic service providers for adopting new technologies in the supply chain.

093-2105   An Empirical Study of Bullwhip Effect in the Oil and Gas Industry

Tianyuan Zhu, Student, University of Calgary, Canada

Jaydeep Balakrishnan, Professor, University of Calgary, Canada

Giovani Da Silveira, Professor, University of Calgary, Canada

Oil and gas companies have unique features different from retail, wholesale and manufacturing. This paper measures the bullwhip effect in the oil and gas companies in North America. We also analyze the factors influencing the bullwhip effect and investigate the relationship between the bullwhip effect and firm performance.

093-0697   How Supply Chain Competition Influences Sustainable Decision Making

Jasper Veldman, Associate Professor, University of Groningen, Netherlands

Niels Pulles, Assistant Professor, University of Groningen, Netherlands

Paul Buijs, Assistant Professor, University of Groningen, Netherlands

In a vignette-based study we investigate how competition drives the sustainability of managerial decisions in a supply chain, particularly sustainable purchasing (upstream) and sharing information with customers or retailers (downstream). We find that managers make unsustainable decisions under competition, and provide some of the reasons why.

093-1600   Advisory versus Delegation: Which Type of Lead Supplier Arrangement is Worth the Trouble?

Ahmed Timoumi, Assistant Professor, Indian School of Business, India

Skander Esseghaier, Associate Professor, Esade Business School, Spain

Levent Koçkesen, Professor, Koc University, Turkey

Retailers may choose to leverage the resources and capabilities of a lead supplier to help them manage some categories. A variety of arrangements can be observed in the industry. They range from advisory to delegation. In this paper, we focus on which and when lead supplier arrangement is worth the trouble.

556

Monday, 08:00 AM - 09:30 AM, Columbia 8   Track: Supply Chain Management

Contributed Session: Quality Issues and Productivity Improvement

Chair(s): Tracy Johnson-Hall

093-2392   Lean Manufacturing Implementation Using Value Stream Mapping and Simulation to Improve Productivity

Vijay Kumar M, Professor, Vishvesvaraya Technological University, India

RUDRESHA N, Student, Vishvesvaraya Technological University, India

B.S AJAY KUMAR, Retired, Vishvesvaraya Technological University, India

Lean Manufacturing has various tools to outsmart its competitors, achieved through improving productivity of its operations, and emphasizes decreasing delivery time of products to customers. VSM is used to reduce non-value adding practices. This work helps productivity improvement in manufacturing stream.

093-0369   Quality Improvement Initiatives: A Communities of Practice Approach

Kiran Kumaraswamy, Student, IIM Bangalore, India

Krishna Sundar Diatha, Professor, Indian Institute of Management Bangalore, India

Siddharth Mahajan, Associate Professor, Indian Institute of Management Bangalore, India

This work analyzes the impact of Communities of Practice (CoP) on quality initiatives of the firms. A three-player competition game analysed to observe the impact of CoP for firms. We discuss the implications for different scenarios for the participating firm's market share and cost of doing CoP.

093-0615   The Effect of Conformance Quality Failures and Supply Chain Locus on Operating Performance

Tracy Johnson-Hall, Assistant Professor, William & Mary, United States

David Hall, Associate Professor, Wright State University, United States

We compare firms that experience product recalls to those that do not, finding significant abnormal operating performance after the recall. In addition, where failure occurs within the supply chain impacts the magnitude of the operating performance effect. We present practical and theoretical implications of these findings.

Monday, 08:00 AM - 09:30 AM

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Monday, 08:00 AM - 09:30 AM, Columbia 9   Track: Behavioral Operations Management

Contributed Session: Behavioral Operations Case Studies

Chair(s): Jelle De Vries

093-1968   Spatial Analysis on Foreign Tourists Behaviour Using GPS Data: Focusing on Osaka Prefecture

Tatsuo oi, Professor, Wakayama University, Japan

Hiroki Sano, Associate Professor, Ritsumeikan University, Japan

Kaede Sano, Associate Professor, Wakayama University, Japan

Osaka expo will be held in 2025 and many more foreign tourists will visit Osaka in the future. However, foreign tourists behaviour has been insufficiently studied. The purpose of this study is to analyse foreign tourists spatial-temporal behaviour using GPS Data in Osaka prefecture.

093-0427   Impact Mechanisms of Project Communication Network Topology for Team Effectiveness

Xue Ding, Student, Tongji University, China

Qian Shi, Professor, Tongji University, China

Eric Du, Associate Professor, Texas A&M University College Station, United States

Yao Huang, Student, Tongji University, China

Based on human-subject behavior experiments, questionnaire surveys, and Agent-Based Modeling, our research aims to explore the impact of project communication network topology for team effectiveness. Finally, we will verify the rationality and validity of the presented optimization strategies in a Chinese case.

093-1728   Environmental Protection Through Sustainable E-Waste Management Practice: An Empirical Study From Asian Developing Countries

sidra ramzan, Student, Northwestern Polytechnical University, China

Chenguang Liu, Associate Professor, Northwestern Polytechnical University, China

HINA MUNIR, Student, Northwestern Polytechnical University, China

Due to the massive amount of electronic waste generated over the years, China established the formal recycling sector to ensure the environmental sustainability. This study explored the determinants that affect an individual's recycling behavior, in order to develop effective policy that assists to regulate the formal e-waste recycling practices nationwide.

093-1047   Big Data: Re-Thinking the Operating Model with Integrated Operations

Denise Chenger , Assistant Professor, Mount Royal University, Canada

Rachael Pettigrew, Assistant Professor, Mount Royal University, Canada

Firms adding big data without re-thinking their operating model may fail to add value. A real-time, 5-pillar decision making model termed "Integrated Operations" has been an option for global oil and gas firms; however, this case study research discusses the significant change and risk involved for these early adopters.

093-1914   Operational Restaurant Policies and Customer Behavior

Jelle De Vries, Assistant Professor, Rotterdam School of Management, Netherlands

Debjit Roy, Associate Professor, Indian Institute of Management Ahmedabad, India

We use data obtained from a large number of restaurant customers to investigate if reservation characteristics impact subsequent customer behavior. Subsequently, we use an advanced simulation model to study if operational restaurant policies can be adapted based on the expected behavior of customers in order to maximize restaurant revenue.

558

Monday, 08:00 AM - 09:30 AM, Columbia 10   Track: Product Innovation and Technology Management

Contributed Session: Effect of physical / network locations on innovation

Chair(s): Anshuman Tripathy

093-0682   Optimal Policy Supports for Renewable Energy Technologies

Hao Ding, Student, Nanjing University of Aeronautics and Astronautics, China

Peng Zhou, Professor, China University of Petroleum, China

Dequn Zhou, Professor, Nanjing University of Aeronautics and Astronautics, China

The diffusion of renewable energy technologies (RETs) would have great influences on the energy transition processes. In this study, a diffusion model is constructed to combine benefits and social acceptance. In addition, the optimal policy support for RETs have been analyzed.

093-1005   Innovation Opportunities Emerging from Responsiveness and Collocated Manufacturing

Lauri Saarinen, Student, Universite De Lausanne, Switzerland

By collocating manufacturing with R&D facilitates innovation, ideas are easily communicated and the product and process for innovations are rapidly tested. We capture the link between responsiveness and innovation in a system-dynamics model to gain understanding of how and how much follow-on options from innovation add value to responsiveness.

093-1176   Module Upgrade Optimization for Profit Maximization

Ali Yassine, Professor, American University of Beirut, Lebanon

Most companies focus on product development to maximize returns. In this paper, the relationship between product value, price, and demand is utilized to build an optimization model for complex module upgrade decisions under discrete and continuous nature. A case study follows to test the effectiveness and importance of this model.

093-0979   Capabilities' Erosion in Commons: An Architecture Lens

Anshuman Tripathy, Associate Professor, Indian Institute of Management Bangalore, India

Shikha Safaya, Post Doc/Researcher, Indian Institute of Management Bangalore, India

The challenge of re-shoring to the US is being discussed amid concerns over irreversible loss of capabilities. We study the sequential loss of manufacturing, development, and design capabilities using an architecture lens. We observe that as modularity increases, system development capabilities get enhanced.

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559   Monday, 08:00 AM - 09:30 AM, Columbia 11   Track: Inventory Management

Contributed Session: Sustainable Inventory Management

Chair(s): Ece Demirci

093-0406   Final Production Run for High-Tech Products Under Warranty

Erik Bertelli, Student, University of California Berkeley, United States

Candace Yano, Professor, University of California Berkeley, United States

High-tech products have short life cycles, but relatively long warranty periods that the manufacturer must consider when ending production. We develop an analytical model to optimize the timing and size of the manufacturer's final production run. The distribution of warranty demand is obtained from an industry-data-inspired forecasting model.

093-0745   The Trade-off Between Inventories, Lead Time, and Capacity: Application to Vaccine Supply Chain Design

Stef Lemmens, Post Doc/Researcher, INSEAD, France

Nico Vandaele, Professor, KU Leuven, Belgium

Catherine Decouttere, Student, KU Leuven, Belgium

Mauro Bernuzzi, Professor, KU Leuven, Belgium

Amir Reichman, Mr., GSK Vaccines, Belgium

The manufacturing of vaccines is subjected to the prevalence of meticulous quality processes. We study the impact of adding capacity to such quality processes on the performance of a rotavirus vaccine manufacturing supply chain. To this end, we combine the guaranteed service approach and approximate queueing networks.

093-1966   Finding Dynamic Repair Priorities

Ece Demirci, Post Doc/Researcher, Eindhoven University of Technology, Netherlands

Joachim Arts, Associate Professor, University of Luxembourg, Luxembourg

Geert-Jan Van Houtum, Professor, Eindhoven University of Technology, Netherlands

We consider dynamic scheduling problem of a repair shop that needs to choose which type of component to repair next. We derive a closed-form formulation for Whittle's index in terms of steady state probabilities. We test the performance of Whittle's index policy as well as heuristics through numerical simulations.

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560   Monday, 08:00 AM - 09:30 AM, Columbia 12   Track: Service Operations

Contributed Session: Managing Sharing Services

Chair(s): Behrooz Pourghannad

093-2052   Drivers' Strategic Refusing Behavior in Competition

Xiaojing Feng, Student, Shanghai Jiao Tong University, China

Ying Rong, Professor, Shanghai Jiao Tong University, China

Tony Haitao Cui, Professor, University of Minnesota, United States

Evidence shows drivers' refusing behavior contributes to high incomes, while it harms refused passengers. We propose an analytical model to capture the refusing behavior of different types of drivers, depict the game dynamics between drivers, and explore the effect of the refusing behavior on the social welfare under different regulations.

093-2343   When Are Marketplaces for Peer-to-Peer Trading of Usage Quotas Pro?table?

Behrooz Pourghannad , Student, University of Minnesota, United States

Saif Benjaafar, Professor, University of Minnesota, United States

A growing number of businesses are being built around a model that provides customers access to a product/service up to a specified amount. We study the impact of allowing customers to trade, among themselves, unused capacity and examine conditions under which peer-to-peer trading is profitable.

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561   Monday, 08:00 AM - 09:30 AM, Monroe   Track: Humanitarian Operations and Crisis Management

Contributed Session: Social Issues in Crisis Management

Chair(s): Fei Gao

093-0627   Media Coverage of Disasters: The Role of Social Affinity

Trilce Encarnacion, Student, Rensselaer Polytechnic Institute, United States

Jose Holguin-Veras, Professor, Rensselaer Polytechnic Institute, United States

Benjamin Horne, Student, Rensselaer Polytechnic Institute, United States

This paper proposes a measure of social affinity between populations to evaluate the determinants of media coverage of disasters. By characterizing, both the impacted population and the news market segments in the US in terms of socio-economic characteristics, social affinity is used to explain public attention to major disasters.

093-0681   Evaluation of Equity from the Perspective of Relief Beneficiaries in Humanitarian Logistics

Wenxin Zhang, Student, University of Science and Technology of China, China

Xihui Wang, Associate Professor, University of Science and Technology of China, China

Equity is critical, but a rarely touched topic in humanitarian logistics (HL). This study tries to quantify equity by taking both quantity and time into account. With data collected from respondents with and without disaster experience, we generate an equity function which yields many meaningful implications.

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093-2076   Optimization of the Decision-Making Process for the Disaster Waste Management

Irineu Brito Jr, Professor, Universidade Estadual Paulista Julio De Mesquita Filho - Unesp, Brazil

Larissa Ciccotti, Post Doc/Researcher, Universidade de São Paulo, Brazil

Hugo Yoshizaki, Associate Professor, Universidade de São Paulo, Brazil

Disasters can produce high amounts of solid waste, whose management is essential for affected communities rehabilitation. Despite its relevance, this subject is still little explored in optimization studies applied to humanitarian operations. This paper presents a brief literature review, underlying gaps, as well as research opportunities on the topic.

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093-2331   Behavior of Evacuees in Emergencies: An Evaluation of Current Models and Best Practices

Attila Hertelendy, Assistant Professor, Florida International University, United States

Sushil Gupta, Professor, Florida International University, United States

Martin Starr, Emeritus Professor, Rollins College, United States

Our research analyzes the behaviors related to evacuations and evaluates the current models associated with best practices. At issue is risk perception, willingness and ability to successfully evacuate based on both the population's ambulatory status, economic status, and the time needed to clear a disaster area.

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093-0036   Cause Marketing: Product Pricing, Design and Distribution

Fei Gao, Assistant Professor, Indiana University Bloomington, United States

In a cause marketing (CM) campaign, a firm donates part of its sales revenue to a charity for a social cause when customers purchase the cause-linked product. We study product pricing, design, and distribution issues in a CM campaign and their implications on the firm and the charity.

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562

Monday, 08:00 AM - 09:30 AM, Lincoln East   Track: Humanitarian Operations and Crisis Management

Contributed Session: Analytical Modeling for Crisis Management

Chair(s): Dehai Liu

093-2423   Augmenting Fixed Framework Agreements in Humanitarian Logistics with a Bonus Contract

Xihui Wang, Associate Professor, University of Science and Technology of China, China

Yu Fan, Student, University of Science and Technology of China, China

Liang Liang, Professor, University of Science and Technology of China, China

Harwin De Vries, Lecturer, INSEAD, France

Luk Van Wassenhove, Professor, INSEAD, France

We propose a bonus contract to incentivize suppliers to reduce delivery lead times of fixed framework agreements (FFAs). We develop a performance measurement model using deprivation level functions (DLFs) and study the feasibility and optimality of the contract. A case study observed in practice is used to illustrate our methodology.

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093-2422   Post-Earthquake Distribution Systems Restoration with Geographical Features-Based Logistical Support

Shuanglin Li, Lecturer, Hunan Normal University, China

Zujun Ma, Professor, Southwest Jiatong University, China

We study the post-earthquake distribution systems restoration problem with logistical support based on geographical features. We propose a non-linear mixed integer programming model and an improved bacterial colony chemotaxis optimization algorithm to determine the optimal restoration plan. We validate the effectiveness of the model and algorithm on standard IEEE instances.

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093-2440   Emergency Logistics: A Simulation Study in Case of Natural Disaster

Wenchao Wei, Associate Professor, Beijing Jiaotong University, China

Rui Yan, Associate Professor, University of Science and Technology Beijing, China

The urgent relief distribution is imperative for alleviating disaster influence in the devastated regions. This study tackles the problem of distributing relief material efficiently and impartially through the distribution network. We develop a simulation model considering demand satisfaction and transportation cost minimization using Analogic software and provide managerial insights.

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093-2425   Discretionary Choice or Long-Range Program in Anti-Terrorism Strategies: A Differential Game Approach

Dehai Liu, Professor, Dongbei University of Finance and Economics, China

Ruirui Chai, Professor, Dongbei University of Finance and Economics, China

Facing the long-term anti-terrorism situation, both government and terrorists continue to adjust their optimal strategies, however traditional games only focus on the small-scale terrorist attack in a shorter time. In this study, we introduce the differential game approach to explain the strategic interactions with each other repeatedly over time.

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563

Monday, 08:00 AM - 09:30 AM, Lincoln West   Track: Empirical Research in Operations Management

Contributed Session: Forecasting and Process Improvement

Chair(s): Panpan Xia

093-1254   Production Optimization for Short Shelf-Life Products

Stephen Disney, Professor, Cardiff University, United Kingdom

Laura Purvis, Senior Lecturer, Cardiff University, United Kingdom

Xia Meng, Assistant Professor, Cardiff University, United Kingdom

We report on production planning improvements for a short shelf-life product. Using simulation, we optimized the production frequency of all 60 products in a factory. Together with improved forecasting and updated safety stocks this reduced the number of rush production orders by 98%; obsolete stock was reduced by 90%.

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093-0235   The Effect of Mobile Payment Promotion on Store Performance

Qianchao Liu, Student, Shanghai Jiao Tong University, China

Ying Rong, Professor, Shanghai Jiao Tong University, China

Mengmeng Wang, Student, Shanghai Jiao Tong University, China

Nowadays, mobile payment has attracted more and more attention. This paper investigates the impact of mobile payment promotions on store sales in the two-sided market. We use the difference in differences (DID) method to analyze the effect of promotions and further measure the factors that impact this effect of promotions.

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093-2221   Using Machine Learning Techniques to Improve Demand Forecasting

Hui Zhao, Associate Professor, Penn State University University Park, United States

Anh Ninh, Assistant Professor, College of William & Mary, United States

Zhen Ming Liu, Assistant Professor, Department of Computer Science, United States

Xiaodan Zhu, Student, Department of Computer Science, United States

We introduce a novel demand forecasting framework to facilitate learning across products using supply chain information. It seamlessly leverages modern machine learning algorithms and relevant domain knowledge to improve forecasting accuracy. The benefit of this approach is validated through extensive analysis using a dataset from a major pharmaceutical company.

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093-1327   A DEA-Based Empirical Analysis for Dynamic Performance of China's Regional Coke Production Chain

Panpan Xia, Student, Adelphi University, United States

Zhimin Huang, Professor, Adelphi University, United States

Jie Wu, Professor, University of Science and Technology of China, China

Coke plays a critical role in China's national economic activities, due to the twofold pressures from the sustainability-concerned public and the international steel market downturn. To provide the industry with quantitative guidelines for resolving current problems, an empirical analysis for dynamic performance of China's regional coke production chain is developed.

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564 Monday, 08:00 AM - 09:30 AM, Jefferson East   Track: Service Operations

Contributed Session: Recovery and Maintenance Service

Chair(s): Joel Goldhar

093-1743   Trust Me, Our Service Is the Best: A Qualitative Analysis in Service Banking Failures

Wandick Leão, Student, Insper, Brazil

Jefferson Monticelli, Professor, Unilasalle, Brazil

Marcelo Sá, Professor, Universidade Nove De Julho, Brazil

Crafting on SERVQUAL and equity this research aimed to examine the service banking failures in Brazil. A qualitative analysis was carried out through 241 structured interviews with banking services consumers, that have solved their problems. Preliminary results indicate that most problems are related to reliability dimension.

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093-0827   Optimal Design of Uptime-Guarantee Maintenance Contracts

Behzad Hezarkhani, Associate Professor, Brunel University, United Kingdom

Mahesh Nagarajan, Professor, University of British Columbia, Canada

Chunyang Tong, Associate Professor, Tongji University, China

We analyze the contracting of maintenance services between a service provider and an operator. The service provider can exert different levels of effort during the course of contract to increase the device's uptime. We investigate possible structures of contracts and highlight a unique structure that always includes revenue-maximizing contracts.

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093-0059   The Evolution of the Revenue Model of Neutral B2B Platform

Zhenyu Liu, Professor, Xiamen University, China

Yingzi Xiong, Associate Professor, Xiamen University, China

We analyze the annual report of five different types of neutral B2B platforms (including Alibaba, etc.) and the evolution of the platform revenue model. The research results show that the revenue of B2B platform is closely related to the platform user's investment, attitude, and loyalty.

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093-1447   Using Socio-Technical Systems Theory and Human Resources Models to Design More Effective Service Operations

Joel Goldhar, Professor, Stuart School of business, United States

Matt Lauritsen, Student, Institute of Psychology, United States

Susanna Aguilar, Post Doc/Researcher, Center for Corporate Performance, Stuart School of business, United States

In a Service the Customer is an employee that does not know that they are working for you! Some models and ideas from HRM integrate customer needs and behaviors into the design of a Service Operating System.

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Monday, 08:00 AM - 09:30 AM

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Monday, 08:00 AM - 09:30 AM, Jefferson West   Track: Supply Chain Risk Management

Invited Session: Optimization Modeling in Applications

Chair(s): Ming Zhao

093-0937   Optimization Models for Group Seating in Stadiums

David Bergman, Assistant Professor, University of Connecticut, United States
Carlos Cardonha, IBM Research, Sao Paulo, IBM, Brazil
Saharnaz Mehrani, Student, University of Connecticut, United States

We study the Stadium Seating Problem, a seating optimization problem faced by organizers of large group outings to events held in stadiums. We explore various computational models and algorithms for optimally seating attendees with the goal of maximizing the number of parties from the same group assigned to connected seats.

093-2232   Inferring Objective Functions from Noisy and Uncertain Data in Healthcare Applications

Taewoo Lee, Assistant Professor, University of Houston, United States

Given inconsistent observations as input data, we develop a new inverse optimization model that determines objective functions that render the most relevant subset of the observations near-optimal. We propose a heuristic algorithm exploiting the solution structure and demonstrate this approach in the diet recommendation context where diet observations are uncertain.

093-2242   Impact of Parallel Imports on Product Launch Decisions in Pharmaceutical Industry

Mehmet Altug, Assistant Professor, George Washington University, United States
Ozge Sahin, Associate Professor, Johns Hopkins University, United States

We study a pharmaceutical ?rm that already introduced a pioneering drug in its home country and has to decide whether to launch in a second country in the same region, where parallel import between these two countries is feasible. We characterize the joint equilibrium pricing and product launch decision.

093-1822   Maximizing the Expected Value of Order Statistics with an Application to Sports' Betting Pools

David Bergman, Assistant Professor, University of Connecticut, United States
Carlos Cardonha, IBM Research, Sao Paulo, IBM, Brazil
Jason Imbrogno, Assistant Professor, University of Northern Alabama, United States
Loenardo Lozano, Assistant Professor, University of Cincinnati, United States

Real-world optimization problem often require maximizing the expected value of order statistics. We discuss algorithms for solving this general and complex class of optimization problems and describe how they can be applied to optimally selecting entries in sports betting pools.

566

Monday, 08:00 AM - 09:30 AM, Georgetown East   Track: Supply Chain Risk Management

Invited Session: Product Design in Various Channels

Chair(s): Haoying Sun

093-1197   Outsourcing with Two OEMs in the Presence of Learning-by-Doing Effect

Wenjing Shen, Associate Professor, Drexel University, United States
Min Wang, Assistant Professor, Drexel University, United States

We consider two OEMs outsourcing to a CM who can learn from first-period production to reduce second-period cost. We demonstrate that the presence of two OEMs can lead to partial outsourcing, even if the OEMs do not compete in the market.

093-1397   Same or Different? An Aesthetic Design Question

Krista Li, Assistant Professor, Indiana University, United States

Should brands selling status goods design high-end and low-end products to look the same or different? We study how brands make this aesthetic design differentiation decision. We first empirically analyze consumers' preferences for aesthetic design differentiation. Then, we set up a game-theoretic model to analyze brands' equilibrium design strategies.

093-2181   Product Line Design Decisions for Platforms

Abhishek Roy, Assistant Professor, Temple University, United States
Edward Anderson, Professor, University of Texas Austin, United States
Geoffrey Parker, Professor, Dartmouth College, United States

We study the scenario where the quality of the interface, e.g., a mobile handset, used to access the platform, is important to consumers, who are heterogeneous in their valuation of interface quality. We show how the platform's product line design decision is altered in the presence of network externalities.

093-2276   Effect of Government Subsidies on the Adoption of Resource Efficient Products

Stephen Gilbert, Professor, McCombs School of Business, United States
Haoying Sun, Assistant Professor, University of Kentucky, United States

We use the durable goods framework to study how government subsidy given at different times shifts consumer's demand patterns and interferes with the firm's incentives to invest in cost cutting measures. We give the conditions under which each type of subsidy does the best in generating resource savings.

567

Monday, 08:00 AM - 09:30 AM, Georgetown West   Track: Retail Operations

Invited Session: Behavioral Research in Retail

Chair(s): Yulia Vorotyntseva

093-0251   Execution Failures in Retail Supply Chains - A Virtual Reality Experiment

Nicole Dehoratius, Lecturer, University of Chicago, United States
Ozgur Gurerk, Assistant Professor, Rwth Aachen University, Germany
Dorothee Honhon, Associate Professor, University of Texas Dallas, United States
Kyle Hyndman, Associate Professor, University of Texas Dallas, United States

We conduct a real-effort experiment in a virtual reality environment wherein subjects must sort two types of products and study the impact of product similarity and visual cues on operational execution in a retail setting. Our findings have implications for product packaging and design.

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093-0492   When Coupon Meets Sharing Economy: An Empirical Study on Platform Price Promotion

Shaojun Qin, Assistant Professor, Fox School of Business, United States
Xueming Luo, Professor, Temple University, United States
Zhijie Lin, Associate Professor, Nanjing University, China

The coupon literature focuses majorly on the price promotion at the product level. Price promotion on the platform level has been less explored. Using proprietary data from a food sharing platform in Asia, we examine the influence of platform coupon on users from both sides of the market.

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093-1369   A Behavioral Analysis of Inventory Management for Substitutable Products

Ying Cao, Assistant Professor, Penn State University Erie, United States
Dorothee Honhon, Associate Professor, University of Texas Dallas, United States
Kyle Hyndman, Associate Professor, University of Texas Dallas, United States

For categories with substitutable products, stock-outs lead to censoring from two sources: retailer does not observe lost sales and cannot tell whether a purchase was consumer's first choice or substitution. We experimentally study the impact of the double-censoring in Newsvendor models and investigate methods to reduce the bias.

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093-2037   Can Managers Plan Assortments? An Experimental Study

Dorothee Honhon, Associate Professor, University of Texas Dallas, United States
Yulia Vorotyntseva, Post Doc/Researcher, Temple University, United States

We study behavior of human assortment planners by means of a behavioral experiment. The subjects are repeatedly picking products to offer on a simulated market in the presence of cannibalization effects and inventory pooling benefits. We find that the subjects perform better when the profit-maximizing assortment consists of fewer products.

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568

Monday, 08:00 AM - 09:30 AM, Cabinet   Track: Sustainable Operations

Contributed Session: Topics in Sustainable Operations (4)

Chair(s): Davis Alves

093-2279   Decision Making for Sustainable Operations by Prescriptive Analytics

Nikhil Varma, Assistant Professor, Ramapo College of New Jersey, United States
Sridevi Shivarajan, Assistant Professor, Ramapo College of New Jersey, United States

Organizations face a decision-making problem on sustainability initiatives. We study the data on organizational initiatives on sustainability and model their impact on the baseline. We focus on studying the value chain of the organization. This study then uses machine learning to define prescriptions based on ROI and impact.

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093-0669   Efficiency Decomposition on the Global Competitiveness of Sustainable Tourism

Dong-Shang Chang, Professor, National Central University, Taiwan, Republic of China
Weichen Lai, Student, National Central University, Taiwan, Republic of China
Rouwen Wang, Student, National Central University, Taiwan, Republic of China

The global competitiveness of sustainable tourism is investigated by the network data envelopment analysis. The efficiency decomposition on four dimensions, including transportation, digital infrastructure, national productivity, and tourism competitiveness, are measured for 146 countries. The findings provide policy implications to reshape tourism with sustainable competitiveness.

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093-2010   The Provision of Pre-Configured Green IT Technologies in Telecommunications Equipment

Davis Alves, Professor, Universidade Paulista - Unip, Brazil
William Lima, Green IT Enthusiastic, Universidade Paulista - UNIP, Brazil
Paula Coelho, Green IT Enthusiastic, Universidade Paulista - UNIP, Brazil
Elisangela Monaco, Student, Universidade Paulista - UNIP, Brazil

Many telecommunications equipment manufacturers - ICT (servers, routers, etc.), sell products on their websites, but wonder if they provide some pre-configured Green IT technology. Thus, this documentary and bibliographic research aims to identify which ICT equipment manufacturers offer Green IT technologies in their products.

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569

Monday, 08:00 AM - 09:30 AM, Intl Ballroom East   Track: Supply Chain Analytics

Invited Session: Data Driven Inventory Management

Chair(s): Honggang Wang

Monday, 08:00 AM - 09:30 AM

093-0514 Dynamic Inventory Control with General Replenishment Cost

Peng Hu, Professor, Huazhong University of Science & Technology, China

Yangge xiao, Student, NUS Business School, Singapore

Xiting Gong, Assistant Professor, Chinese Univ of Hong Kong, Hong Kong

This work studies the classic periodic-review inventory control problem with general replenishment cost. Under some reasonable conditions, we manage to fully characterize the optimal policy and show a replenishment is executed if, and only if, the initially inventory level falls below a threshold.

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093-0559 The Value of Advance Demand Information for Highly-Perishable Inventory

Chokdee Siawsolit, Student, Drucker School of Management, United States

Gary Gaukler, Associate Professor, Drucker School of Management, United States

We explore how a grocery retailer managing perishable inventory, subject to uncertain demand, could improve their daily operation by collecting customers' demand in advance. Under FEFO issuing policy, we describe how increasing the proportion of advance orders influences daily replenishment quantity, stock level, fill rate, and in-store and online availabilities.

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093-0950 An Analysis of Safety Stock to Determine the Impact of Vendor Managed Inventory for Blood Supply

Bukola Bakare, Student, North Dakota State University, United States

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

Satpal Wadhwa, Student, North Dakota State University, United States

Olawale Durosinmi-Etti, Student, University of North Carolina Chapel Hill, United States

Analysis of safety stock is used to determine the impact of vendor managed inventory (VMI) for blood supply. Historically, VMI has proven to better allocate stock compared to other approaches. The study uses VMI to determine the optimal safety stock for blood while accounting for wastage.

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093-1936 Fourier Metamodels for WIP/Queue Trajectory Characterization

Russell Barton, Professor, Penn State University University Park, United States

Xinyi Wu, Demand Planner, Reynolds Consumer Products, United States

Coefficients in the Fourier transform of simulation trajectory data (such as work in process or queue length over time) can be used to discriminate differences between congested and uncongested systems. Coefficient values can be modeled as a function of the system model parameters, allowing forecast of average trajectories.

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Monday, 09:45 AM - 11:15 AM

572 Monday, 09:45 AM - 11:15 AM, Oak Lawn   Track: Marketing and Operations Management

Contributed Session: Consumption Behaviors

Chair(s): Tonny Rodrigues

093-0027   Luxury Consumption Behavior of Rich Muslims Through the Lens of Domains of Living

Khurram Sharif, Associate Professor, Qatar University, Qatar

The study investigated the relationship between the domains of living (DOLs) and luxury consumption behavior (LCB) of affluent Muslims. Key results indicated significant association between the three DOLs and LCB. There were indications that for affluent Muslim consumers, consumption of luxury products seemed to have become a socially accepted norm.

093-1653   Religious Clothing Consumption: Social Networks, Digital Influencers and Consumer Practices

Tonny Rodrigues, Retired, Centro Universitário Santo Agostinho, Brazil

Liliana Soares, Student, Centro Universitário Santo Agostinho, Brazil

The objective was to understand the consumption of clothing by evangelical women. The results show that evangelical women have more uniform clothing, regardless of location, age, occasion, and people who accompany them. In addition, they are more concerned with covering the body as symbolism of respect and acceptance.

093-1648   Family Relations and Nostalgia in Car Consumption by Elderly Consumers

Tonny Rodrigues, Retired, Centro Universitário Santo Agostinho, Brazil

Lisia Ferreira, Student, Centro Universitário Santo Agostinho, Brazil

The objective was to understand the consumption of automobiles by elderly consumers. The results indicate that family relationships between the elderly and their children influence the purchase of the car. Still, feelings of nostalgia make some old-fashioned car models the likes of these consumers.

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576 Monday, 09:45 AM - 11:15 AM, Jay   Track: Emerging Topics in Operations Management

Invited Session: Crowdfunding

Chair(s): Soraya Fatehi

093-0479   Designing Rewards-Based Crowdfunding Campaigns for Strategic Contributors

Soudipta Chakraborty, Student, Duke University Durham, United States

Robert Swinney, Associate Professor, Duke University Durham, United States

We study a model of rewards-based crowdfunding with the all or nothing funding mechanism. We determine how a creator should design her campaign when the uncertainty of receiving the reward makes contributors behave strategically.

093-0604   Crowdfunding vs Bank Financing: Effects of Market Uncertainty and Word-of-Mouth Communication

Fasheng Xu, Student, Washington University St Louis, United States

Xiaomeng Guo, Assistant Professor, Hong Kong Polytechnic Univ, Hong Kong

Guang Xiao, Student, Hong Kong Polytechnic Univ, Hong Kong

Fuqiang Zhang, Professor, Washington University St Louis, United States

This paper investigates a firm's optimal funding choice when launching an innovative product to the market with both market uncertainty and word-of-mouth communication. We characterize the firm's optimal pricing strategies under two funding choices (i.e., bank financing and crowdfunding) and compare their performances and implications on social welfare.

093-0460   Crowdfunding via Revenue-Sharing Contracts

Soraya Fatehi, Student, Foster School of Business, United States

Michael Wagner, Professor, Foster School of Business, United States

We present a new model of crowdfunding where a platform acts as a matchmaker between a firm needing funds and a crowd of investors. Once the firm is funded, it pays back the investors using revenue sharing contracts. We show the proposed contracts are superior to other financing models.

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577 Monday, 09:45 AM - 11:15 AM, Holmead East   Track: Global Supply Chain Management

Contributed Session: Emerging Trends in Global Supply Chain Sourcing

Chair(s): Alessandro Ancarani

093-1035   Does Reshoring Improve Financial Performance?

Alessandro Ancarani, Professor, University of Catania, Italy

Carmela Di Mauro, Associate Professor, University of Catania, Italy

We study the financial performance of companies reshoring to Europe. Financial data before and after reshoring on 244 companies were extracted from the Amadeus database. Changes in profitability indexes following reshoring were regressed on the main reshoring motivations and on variation of fixed capital, while controlling for industry variations.

093-1033   Reshoring and Sustainability: An Exploration of the Link

Alessandro Ancarani, Professor, University of Catania, Italy

Carmela Di Mauro, Associate Professor, University of Catania, Italy

Sebastiano Grasso, Student, University of Catania, Italy

Monday, 09:45 AM - 11:15 AM

We study environmental and social sustainability activities of companies that have reshored production to the US. Data on sustainability activities of 318 reshoring companies were extracted from secondary sources. The likelihood of such activities was estimated against company characteristics and competitive priorities in order to understand whether reshoring fosters sustainability

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578

Monday, 09:45 AM - 11:15 AM, Holmead West   Track: Retail Operations

Invited Session: Omni-channel Retail Operations

Chair(s): M. Serkan Akturk

093-0940   Buy It, Try It, Rate It: The Impact of Buyer Feedback in Online Retailing

Alan Pritchard, Assistant Professor, Texas Tech University, United States
Robert Windle, Professor, University of Maryland, United States
Philip Evers, Associate Professor, University of Maryland, United States
Guangzhi Shang, Assistant Professor, Florida State University, United States

This study presents a theoretical and empirical analysis of the relationship between buyer feedback and supply and demand in a popular online marketplace.

093-1400   Omnichannel Assortment Optimization under the Multinomial Logit Model with a Features Tree

Venus Lo, Student, Cornell University, United States
Huseyin Topaloglu, Professor, Cornell University, United States

A retailer offers assortments in-store and online. Customers purchase in-store, or examine products and purchase online. We describe how products share features with a tree, and update preferences for online products based on features seen in-store. The problem is to choose an in-store assortment to maximize the retailer's revenue.

093-1579   Channel Transparency and Omnichannel Retailing: The Impact of Sharing Retail Store Inventory Availability with Online Shoppers

Xinyi Ren, Student, University of Maryland, United States
Philip Evers, Associate Professor, University of Maryland, United States
Robert Windle, Professor, University of Maryland, United States
Curtis Grimm, Professor, University of Maryland, United States

This paper empirically examines the effects of sharing retail store inventory availability with online shoppers at both the marketing and reverse logistics interfaces. Specifically, the impacts of this policy on customers' purchasing decisions and company's operational costs are studied. Furthermore, the implications of these findings on inventory management are discussed.

093-0515   Assessing the Value of Launching Omnichannel Retailing Services

M. Serkan Akturk, Assistant Professor, Clemson University, United States
Yao Chen, Student, Clemson University, United States

Omnichannel retailing features, such as ship-to-store service, are designed to deliver a seamless shopping experience for customers. We assess the promise of ship-to-store capability by developing analytical and empirical models and investigate its impact on a retailer's operations.

579

Monday, 09:45 AM - 11:15 AM, Gunston East   Track: Purchasing and Supplier Management

Invited Session: Purchasing intelligence and big data

Chair(s): Riikka Kaipia

093-1643   Leveraging Big Data in Purchasing: An Analytics Capability Perspective

Mikael Öhman, Student, Aalto University, Finland
Riikka Kaipia, Senior Lecturer, Aalto University, Finland
Ilari Alén, Student, Department of Industrial Engineering and Management, Finland
Risto Rajala, Associate Professor, Department of Industrial Engineering and Management, Finland

The prospects of big data are driving companies to develop their analytics capability. Through an in-depth single case study, we explore functional differences in analytics capability development. We arrive at a conceptualization of the analytics capability which explains functional differences in how firms organize for leveraging big data.

093-1335   Developing and Evaluating a Catalog of Supplier Development Activities

Liang Chen, Assistant Professor, West Texas A&M University, United States
Scott Ellis, Associate Professor, Georgia Southern University, United States
Clyde Holsapple, Professor, University of Kentucky, United States

Supplier development (SD) has been widely used and studied. In order to develop a catalog of SD activities, we identify over 500 SD activities from about 100 empirical articles and then condense and classify them into 30 types. Our catalog is further evaluated by a panel of SD scholars.

093-1614   Data Analytics in Purchasing and Supply Management - Insights From a Survey

Ala Pazirandeh, Assistant Professor, Chalmers University of Technology, Sweden
Riikka Kaipia, Senior Lecturer, Aalto University, Finland
Patrik Jonsson, Professor, Chalmers University of Technology, Sweden

The management and role of data analytics usage in the area of purchasing and supply management (PSM) is studied via a survey with 61 respondents in Sweden and Finland. The study finds that firms are expecting data analytics to be a central tool in the future.

Monday, 09:45 AM - 11:15 AM

580

Monday, 09:45 AM - 11:15 AM, Gunston West   Track: Next Generation Operations

Contributed Session: Industry 4.0

Chair(s): Carlos Parra

093-0342   Exploring the Impact of Industry 4.0 Investment on Manufacturing Organization

Matteo Kalchschmidt, Professor, Universita Degli Studi Di Bergamo, Italy

This paper, by means of 8 case studies, discusses the implication of Industry 4.0 investments jointly on competences and organization, focusing on SMEs. The work adopts a socio-technical perspective to analyze the decision of organizational and technological investment of manufacturing firms. Results highlight the emergence of new manufacturing paradigms.

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093-2358   Modelling the Factors Related to Implementation of Industry 4.0 in India

veepan kumar, Student, Indian institute of Technology Delhi IIT, India
Prem Vrat, Professor, THE NORTHCAP UNIVERSITY GURUGRAM, India
Ravi Shankar, Professor, Indian institute of Technology Delhi IIT, India

The research focuses on analyzing the factors for implementing Industry 4.0 using the Interpretive Structural Modelling. The results show interesting insights related to management of strategic, tactical, operational, and performance variables. The variables related to operations of Industry 4.0 should be supported by strategic variables to deliver performance of the system.

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093-1233   Modelling the Factors Related to Implementation of Industry 4.0 in India

veepan kumar, Student, Indian institute of Technology Delhi IIT, India
Prem Vrat, Professor, THE NORTHCAP UNIVERSITY GURUGRAM, India
Ravi Shankar, Professor, Indian institute of Technology Delhi IIT, India

The research focuses on analyzing the factors for implementing Industry 4.0 using Interpretive Structural Modelling. The results show interesting insights related to management of strategic, tactical, operational, and performance variables. The variables related to operations of Industry 4.0 should be supported by strategic variables to deliver performance of the system.

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093-1085   Exploratory Content Analysis (Using Text Data Mining) of POMJ

Carlos Parra, Assistant Professor, Florida International University, United States
Sushil Gupta, Professor, Florida International University, United States
Subodha Kumar, Professor, Temple University, United States

This study uses Text Data Mining to explore the content of POMS academic publication (POMJ). The collection analyzed comprises all articles published in POMJ from 1992 to 2017. Content is explored through document, term, and topic associations to identify trends on how various OM subjects have been handled and evolved.

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581

Monday, 09:45 AM - 11:15 AM, Fairchild East   Track: Sustainable Operations

Contributed Session: Stakeholder Management and Disclosure

Chair(s): Zhenzhen Yan

093-1338   Improving Sustainability in Indian Manufacturing Supply Chains Through Supplier Relationship Management

Nagesh Murthy, Associate Professor, University of Oregon, United States
Karuna Jain, Professor, National Instituteof Industrial Engineering, Mumbai, India
Sushmita Narayana Aghalaya, Assistant Professor, National Institute of Industrial Engineering, India

Indian manufacturing firms deal with increasing environmental regulations and global visibility of their networks, resulting in a need to address sustainability concerns in their suppliers. This study presents the various transactional and collaborative approaches employed by select Indian manufacturing sectors and their potential for enhancing sustainability in their supplier base.

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093-1395   Direct and Indirect Sustainable Investment in a Competitive Environment

Mike Gordon, Student, University of Pittsburgh, United States

This research focuses on how consumers react to a company introducing a green product and investing in Corporate Social Responsibility (CSR) in a competitive environment. Though these are both positive investments in the eyes of consumers, green product innovation and CSR investment are analyzed as separate investments.

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093-1840   Sustainability Disclosure-Performance Link: A New Perspective of Measurement

Zhenzhen Yan, Student, Michigan State University, United States

Over thirty years, the exploration of sustainability disclosure-performance link keeps yielding mixed results. Our research suggests that five features of sustainability disclosure should be measured separately and each feature is affected by firms' sustainability performance in different ways. Sustainability disclosure-performance link is also influenced by aspects to be disclosed.

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582

Monday, 09:45 AM - 11:15 AM, Fairchild West   Track: Socially Responsible Operations

Contributed Session: Managing Social Responsibility I

Chair(s): Dali Huang

093-0929   Alignment of Environmental Policies Between Buyers and Suppliers: A Resource Dependence Perspective

Alejandro Ortiz-Perez, Student, University of Granada, Spain
Juan Alberto Aragon-Correa, Professor, University of Granada, Spain
Nuria Esther Hurtado-Torres, Professor, University of Granada, Spain

Monday, 09:45 AM - 11:15 AM

Drawing from resource dependence theory, this study examines how dependence and interorganizational governance mechanisms influence the alignment of environmental policies between buyers and suppliers and the moderating role of the environmental regulatory distance between the countries of the involved firms in that relationship.

093-1026   Sustainable Sourcing in the Apparel Industry: The Small Business Owners' Perspective

Jin Su, Associate Professor, The University Of North Carolina At Greensboro, United States
Anne Wood, Lecturer, The University of North Carolina at Greensboro, United States
Vidyaranya Gargeya, Professor, The University Of North Carolina At Greensboro, United States

Sustainable sourcing is an emerging industrial movement worldwide. This qualitative multi-case study presents the sustainable sourcing issues from the perspective of small business owners in the U.S. apparel industry. The findings include motives for responsible sourcing, supplier selection criteria, managerial approaches, and barriers to sustainable sourcing.

093-0927   Pre-Adversity and In-Crisis Resilience: The Importance of Sustainable Business Relationships

Alejandro Ortiz-Perez, Student, University of Granada, Spain
Jury Gualandris, Assistant Professor, Ivey Business School, Western University, Canada
Natalia Ortiz-de-Mandojana, Professor, University of Granada, Spain

We examine how the sustainability commitment of suppliers and customers can positively affect the pre-adversity and in-crisis resilience of a focal company with a dataset that contains 5800 companies and 30000 customer and supplier contracts across 77 industries and countries.

093-2453   True or not World's Automakers Face Massive Disruption from Car Sharing Phenomenon?

Dali Huang, Professor, Tianjin Uinversity, China
Tao Li, Assistant Professor, Santa Clara University, United States
Zhen He, Professor, Tianjin University, China

The sharing economy is coming fiercely and is disrupting the traditional industries across the globe. Therefore, some firms have been active in seeking new strategies to adjust their profit formula under sharing economy. Our research aims to study how should the carmakers respond to the trend of car sharing.

583

Monday, 09:45 AM - 11:15 AM, Embassy   Track: Environmental Operations Management

Contributed Session: Survey & Assessment of Environmental Practices, Energy and Emissions

Chair(s): Frank Baumgärtner

093-1983   An Assessment of Measurement Equivalence for Environmental Practices and Environmental Performance Constructs

Teresa Betts, Assistant Professor, Murray State University, United States
Márcio Thomé, Assistant Professor, Pontifícia Universidade Católica do Rio de Janeiro - PUC-Rio, Brazil

Establishing measurement equivalence of latent variables in survey research where multiple heterogeneous groups exist has been identified as an important condition that should be met for meaningful analysis. This study evaluates three environmental practices and one environmental performance measure from the Global Manufacturing Research Group V survey.

093-1810   When Does it Pay to be Green? The Moderating Role of Industry Context

Thomas Noordewier, Professor, University of Vermont, United States
Marilyn Lucas, Associate Professor, University of Vermont, United States

In this empirical study, we identify two industry-level characteristics (i.e., industry concentration and industry growth) as critical components of context influencing the relationship between environmental management practices (EMP) and financial performance (FP) and test their joint, rather than individual, contingent effect on the EMP-FP relationship.

093-0926   CO2 Emissions Across Different Industries: Evidence from Latent Growth Modelling

Ziaul Haque Munim, Associate Professor, U of Agder & U of South-Eastern Norway, Norway

This study investigates CO2 growth rate from five different industries: manufacturing and construction, transport, electricity and heat production, residential buildings and services (commercial and public), and other sectors excluding residential buildings and services using data collected from the World Bank.

093-1673   The External Costs of Electricity - A Method of Environmental Assessment of the Energy Revolution

Frank Baumgärtner, Student, Rwth Aachen University, Germany
Peter Letmathe, Professor, Rwth Aachen University, Germany

European energy production is undergoing major transformations. We analyze actual and future external costs of European electricity production systems in the individual countries through a simulation. We consider technological and grid mix changes in order to derive implications for the conversion of energy systems.

585

Monday, 09:45 AM - 11:15 AM, Cardozo   Track: Economics Models in Operations Management

Contributed Session: Emerging issues in operations management

Chair(s): Hing Kai Chan

093-1148   Losing Wait - With an Analogy to Weight

Willard Price, Emeritus Professor, University of the Pacific, United States

This author suffers from a long frustration by excessive queuing in personal, professional and productive life. We know how to reduce wait (and weight) and economically rationalize when the cost of wait/weight to persons, vehicles, or products are internalized. Examples/solutions are drawn from the author's field studies of queuing systems.

093-2311   Make in India - A Critical Analysis of its Effectiveness

joginder lamba, Professor, K.J Somaiya Institute of Management Studies & Research, India

Nilakantan Narasinganallur, Associate Professor, KJ SIMSR, India

Make in India, a government initiative started in 2014 by Indian Prime Minister Modi, has its share of supporters and non-believers. We present a critical review of its effectiveness in bringing manufacturing majors from around the world to manufacture in India and create manufacturing hubs in India.

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093-1414   Circular-Economy Based Supply Chain Management

Ayush Gautam, Student, Indian institute of Technology Delhi IIT, India

Ravi Shankar, Professor, Indian institute of Technology Delhi IIT, India

Prem vrat, Emeritus Professor, Indian institute of Technology Delhi IIT, India

By 2050, waste from end-of-life solar-panels will be 78 million tons. Therefore, panels' waste management and secondary raw material extraction becomes important to conserve resources and reduce production costs. This research hence focuses on robust circular supply chain considering recycling, re-manufacturing, reuse, and repair in an integrated manner.

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093-1566   The Management of Autonomous Vehicle Technology and Service Level in Ride Sharing Business

Fei Qin, Associate Professor, Shippensburg University, United States

Saravanan Kuppusamy, Assistant Professor, Rowan University, United States

We study Ride-Sharing Business that offers both Autonomous Vehicle (AV) and Conventional Vehicle (CV) services to consumers. We build an economic model that captures the factors influencing AV adoption which is characterized by both AV technology and service level improvement.

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093-0086   A Hybrid Time Series SARIMA-SVR Approach

Hing Kai Chan, Professor, University of Nottingham Ningbo China, China

Shuojiang Xu, Student, University of Nottingham Ningbo China, China

Tiantian Zhang, Assistant Professor, University of Nottingham Ningbo China, China

A hybrid SARIMA-SVR forecasting model is proposed. Time series is analyzed by SARIMA and then Gaussian White Noise is reversely calculated as one of the inputs for SVR. A numerical example was tested for demonstration purposes. Results suggest that the proposed model incorporating Gaussian White Noise can improve forecasting accuracy.

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587

Monday, 09:45 AM - 11:15 AM, Columbia 1	Track: Scheduling and Logistics

Contributed Session: **Supply Chain Scheduling**

Chair(s): Guohua Wan

093-1846   Mixed Integer Linear Programming Formulation for a Supply Chain Scheduling Problem with Penalties

Ramakrishna Govindu, Senior Lecturer, University of South Florida, United States

Anurag Agarwal, Professor, University of South Florida, United States

In this paper we present a mixed integer linear programming formulation for a supply chain scheduling problem. In this problem, the supplier is supplying similar, but different products to multiple customers and needs to generate schedules to minimize late penalties.

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093-1046   Third-Party Logistics Planning and Production Scheduling Integration

Farshid Azadian, Associate Professor, Embry-Riddle Aeronautical University, United States

We present an operational decision support tool for the integration of production scheduling and logistics planning with the objective of minimizing the cost of shipping and tardiness penalties. We introduce an innovative decomposition solution algorithm and evaluate the performance of the approach in a case study of a contract manufacturer.

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093-1088   Tactical and Operational Production-Routing with Dedicated Routes

Tiffany Bayley, Assistant Professor, Wilfrid Laurier University, Canada

James Bookbinder, Professor, University of Waterloo, Canada

We study a production-routing problem with coordinated replenishment of multiple product families and a heterogeneous fleet of vehicles. Varying levels of demand and routing flexibility are considered in our branch-and-cut and dedicated-routes heuristics. In this talk, we discuss solution quality, computational time, and the business implication of these results.

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093-2143   Supply Chain Scheduling with Fixed Time Interval Supplies

Xueqi Wu, Student, Shanghai Jiao Tong University, China

Guohua Wan, Professor, Shanghai Jiao Tong University, China

We consider a supply chain scheduling problem with fixed time interval supplies. The objective is to minimize the sum of job flowtime (representing work-in inventory). We develop a branch and pricing algorithm to solve the problem and conduct comprehensive computational experiments to test the performance of the algorithm.

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589

Monday, 09:45 AM - 11:15 AM, Columbia 3	Track: Scheduling and Logistics

Contributed Session: **Intermodal Transportation and Network Design**

Chair(s): Li-Lian Gao

093-1173   Analyzing the Inhibitors of Multi-Modal Freight Transportation Practices in Multi-Stakeholders' Perspective

Aalok Kumar, Student, Indian Institute of Technology Roorkee, India

A Ramesh, Assistant Professor, Indian Institute of Technology Roorkee, India

Monday, 09:45 AM - 11:15 AM

The present study identifies the relationship among twenty-two inhibitors of multi-modal freight transportation systems in a developing nation context. The interrelationship of selected inhibitors are analyzed with Grey-DEMATEL methodology. The result shows availability of transport infrastructure and low frequency of freight trains identifies as major inhibitors.

093-1941   Planning and Operations of Intermodal Transport

Rob Zuidwijk, Professor, Rotterdam School of Management, Netherlands

This talk presents research progress on the planning and operations of intermodal transport. The study focuses on collaboration among providers of logistics services and the sourcing of transport capacity to establish reliable services.

093-1757   Brazilian Corn Competitiveness Evaluation: Applying the Problem of Mixed Complementarity

Bruna Lopes, Student, Faculdade de Engenharia Agrícola, Brazil

Karina Marsola, Student, Faculdade de Engenharia Agrícola, Brazil

Andréa Oliveira, Professor, University of Campinas, Brazil

Corn production constitutes a significant segment of Brazilian agricultural exportation, most of which is destined for the Asian market. Cereal competitiveness is mainly limited by transportation costs. A spatial equilibrium model was employed to optimize logistic fluxes, and inter-modality was found to be the most efficient distribution method.

093-1702   Distribution Network Design in an Omni-Channel Environment

Li-Lian Gao, Associate Professor, Hofstra University, United States

We consider a distribution network for retailers who operate in an omni-channel environment. The retailers have physical and online stores. Online customers receive orders from distribution centers, physical stores, or suppliers. Retailers also offer return service. We present a mixed-integer programming model and solution procedure for the distribution network design.

590

Monday, 09:45 AM - 11:15 AM, Columbia 4   Track: Healthcare Analytics

Contributed Session: Reducing Hospital Readmissions: An Analytics Approach

Chair(s): Sadaf Kabir

093-1280   Utilizing Data-Driven Decision Support Systems to Reduce Readmission Rates for Patients with Congestive Heart Failure

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

Jayakanth Srinivasan, Associate Professor, Boston University, United States

Janelle Heineke, Professor, Boston University, United States

Currently, CHF patients still have a 30-day readmission rate of over 20%. We create a data-driven decision support system to utilize patient-specific information to more accurately identify patients most likely to be readmitted, and whether it's for condition-related reasons. This allows physicians to suggest patient-specific readmission prevention strategies.

093-0586   Determinants of ICU Readmission Prediction Model Performance: A Systematic Review and Meta-Analysis

SHIPING LIU, Student, University of Maryland, United States

Sean Barnes, Assistant Professor, University of Maryland, United States

Miranda Myers, Student, University of Maryland, United States

Guodong Gao, Associate Professor, University of Maryland, United States

Michael McCurdy, Assistant Professor, University of Maryland, United States

We performed a systematic review and meta-analysis of intensive care unit (ICU) readmission prediction studies. We extracted characteristics about data collection and model development from eligible studies, and identified several variables significantly associated with model performance. Our analysis should inform better ICU readmission prediction modeling and motivate similar studies.

093-1154   Non-Linear Feature Selection for prediction of Hospital Length of Stay

Leily Farrokhvar, Assistant Professor, West Virginia University, United States

Sadaf Kabir, Student, West Virginia University, United States

Precise prediction of healthcare outcomes requires a dedicated model which takes a large number of features. In this study, we develop predictive models for hospital length of stay and then apply an automatic feature selection method to evaluate the effects of reducing features and decreasing the size of the model.

591

Monday, 09:45 AM - 11:15 AM, Columbia 5   Track: Healthcare Operations Management

Contributed Session: Empirical Healthcare Operations II

Chair(s): Onyi Nwafor

093-2344   Re-Aligning Incentives to Combat Workarounds: A Case Study From a Gastroenterology Practice

Shivraj Kanungo, Associate Professor, George Washington University, United States

The team of gastroenterologists were stretched too thin and we were feeling overwhelmed as a result of increase in patient load. Using causal loop diagrams we study how short-term fixes tend to be overwhelmingly favored. While this aggravates the situation, we show show how re-aligning incentives is a better option.

093-1251   Examining the Impact of Hospital Internal and External Factors on Bias in Medical Treatment

Deepa Wani, Assistant Professor, University of Texas at San Antonio, United States

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

This study looks at hospitals, patients, legislative, and market specific factors that can lead to biases in medical treatment as well as conditions under which these biases negatively influence clinical outcomes.

093-1497   Use of Hospital Resources to Explore or to Exploit: How This Choice Affects Patient Satisfaction

Onyi Nwafor, Assistant Professor, University of North Carolina Greensboro, United States

Norman Johnson, Professor, University of Houston, United States

To improve the quality of healthcare delivery services, hospitals engage in both explorative and exploitative activities. However, pursuing both kinds of activities often results in the well-known productivity paradox. Building on extant research, we empirically examine how resources enable hospitals to manage the paradoxical balance of exploration and exploitation.

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592   Monday, 09:45 AM - 11:15 AM, Columbia 6   Track: Healthcare Operations Management

Contributed Session: **Coordination and operational excellence in healthcare**

Chair(s): Yingchao Lan

093-0905   Achieving Operations Excellence in Healthcare Organizations

Uche Nwabueze, Professor, Texas A&M - Galveston, United States

Process improvement in clinical and medical care units is being implemented in a vacuum and in a piecemeal fashion due to the fact that managerially, operationally, and strategically, many hospital systems lack the knowledge and understanding of operations excellence concepts, tools, and techniques required for detailed implementation.

093-2083   Applying MAUT to Improve the Perceived Quality in a Healthcare Operator in Southeastern Brazil

Amanda Lima, Student, Federal University of Juiz-de-Fora, Brazil

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

This work presents the results of applying the Multi-Attribute Utility Theory in the priorization of strategic actions to improve the perceived quality in a major healthcare operator in Southeastern Brazil, which facilitated a significant improvement in management and performance indicators.

093-0466   Collaborative Partnerships in Integrated Healthcare Delivery: Evidence from Accountable Care Organizations

Yingchao Lan, Assistant Professor, University of Nebraska Lincoln, United States

Aravind Chandrasekaran, Associate Professor, Ohio State University, United States

Daniel Walker, Assistant Professor, Ohio State University, United States

Deepa Wani, Assistant Professor, University of Texas at San Antonio, United States

Studies in the healthcare operations literature primarily have focused on collaboration within a single organization, thus they shed little light on how healthcare organizations develop partnerships across the care continuum to manage a patient population panel. This study investigates the performance implications of collaborative partnership in an integrated healthcare delivery.

093-0370   Menstrual Hygiene Management for Adolescent Girls in India: A Dynamic Supply Chain Model

Mriganka Saikia, Student, Bits Pilani, India

Krishna Sundar Diatha, Professor, Indian Institute of Management Bangalore, India

Kiran Kumaraswamy, Student, Indian Institute of Management Bangalore, India

Menstrual hygiene management (MHM) is of growing concern among adolescent girls in India. Sanitary napkins have seen low uptake in rural areas. A system dynamics model forecasts the sanitary napkin demand. An optimised distribution network for MHM product is developed. The impact of government policies on MHM product is analyzed.

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593   Monday, 09:45 AM - 11:15 AM, Columbia 7   Track: Supply Chain Management

Contributed Session: **Managing the Efficiency and Effectiveness of Supply Chains**

Chair(s): Bishal Sarkar

093-0280   Internal and External Alignment: The Twain May Never Meet

Piyush Shah, Student, Arizona State University, United States

Thomas Kull, Associate Professor, Arizona State University Tempe, United States

We show that simultaneously achieving high levels of internal and external alignment may not be possible. We also show that alignment activities may have a non-intuitive impact on internal and external alignment. We use an analytical model to generate the data and then use linear regression and frontier analysis.

093-2268   Dynamics of Heterogeneous Participation in Purchasing Cooperatives

Thomas Kull, Associate Professor, Arizona State University Tempe, United States

Yang Yang, Assistant Professor, University of Texas at El Paso, United States

Marc Hatton, Student, Arizona State University, United States

Purchasing cooperatives are instances of competition networks that exploit economies of scale to benefit buyer participants. Participant benefit and involvement are heterogeneous. Using large-scale secondary data and simulation methods, we examine the dynamics that lead to such heterogeneity. Results have implications for purchasing cooperatives and multi-party coopetition instances.

093-1194   On The Relationships Among Decoupling Points, Mass Customization, Modularization, and Postponement

Jan Olhager, Professor, Lund University, Sweden

Concepts such as decoupling points, mass customization, modularization, and postponement can be helpful to structure and improve operations and supply chains. We discuss the relationships among these concepts and present a unifying framework that includes key aspects.

093-1210   Modelling Barriers of Port Logistics' Effectiveness Using ISM Approach

Bishal Sarkar, Student, Indian institute of Technology Delhi IIT, India

Ravi Shankar, Professor, Indian institute of Technology Delhi IIT, India

Monday, 09:45 AM - 11:15 AM

Arpan Kar, Associate Professor, Indian institute of Technology Delhi IIT, India

The purpose of this paper is to formulate frameworks for barriers of port logistics using Interpretive Structural Modelling (ISM). Findings reveal the importance of having a system approach towards managing barriers related to strategic, tactical, operational aspects of business. Results derive insights from driving power and dependence relationships.

594

Monday, 09:45 AM - 11:15 AM, Columbia 8   Track: Supply Chain Management

Invited Session: Advances in Supply Chains

Chair(s): Anupam Agrawal   Ujjal Mukherjee

093-1074   Optimal Safety Stocks Allocation in Online Retail

Mayukh Majumdar, Student, Texas A&M University College Station, United States

Chelliah Sriskandarajah, Professor, Texas A&M University College Station, United States

Online retailers always encounter difficulties in balancing the trade-off between expensive transshipments and safety stocks to fulfill customer demand on time. We study the optimal allocation of safety stocks across the fulfillment centers of an online retailer to minimize the total cost of transportation and inventory under stochastic demand.

093-1880   Designing and Sustaining the Precision Medicine Supply Chain: The Impact of Clinical Guidelines

Jingwen Yang, Student, University of Minnesota, United States

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

Kingshuk Sinha, Professor, University of Minnesota, United States

Precision medicine is an approach for disease treatment that takes into account individual variability in genes and environment. We empirically investigate the impact of implementing clinical guidelines on designing and sustaining precision medicine supply chain. The analysis is based on a sample of 26 FDA approved precision medicine drugs.

093-1803   Care Coordination in Healthcare

Anupam Agrawal, Associate Professor, Texas A&M University College Station, United States

Arun Sen, Professor, Texas A&M University College Station, United States

Care coordination is a deliberate organization of patient care activities between two or more participants (including the patient) involved in a patient's care to facilitate the appropriate delivery of health care services. Organizing such care involves marshalling of personnel and other resources to carry out required patient care.

093-0802   Optimal Adoption Strategy for Robot-Assisted Surgical Procedures

Ujjal Mukherjee, Assistant Professor, University of Illinois Urbana-Champaign, United States

In this paper we analyze optimal adoption policies for robot-assisted surgeries. The policies we adopt are related to the size of a surgical team, selection of surgical procedures, surgeons, and procedure types.

595

Monday, 09:45 AM - 11:15 AM, Columbia 9   Track: Behavioral Operations Management

Contributed Session: Political Risk, Social Dilemma, & Suppliers

Chair(s): Zoltan Dobra

093-1775   Modeling Individual Behavior in the Beer Game

Brad Meyer, Associate Professor, Drake University, United States

We update previously published models of decision-making behavior in the beer game using additional feedback from game participants. We include a more flexible approach for the user's demand forecast and account for a change in mental model that occurs upon the arrival of excess inventory.

093-1900   Human Side of Industry 4.0: An Empirical Study of a Human-Machine Interaction

Zoltan Dobra, Student, Szechenyi Istvan University, Hungary

The purpose of this research is to analyze the human-machine cooperation from the human point of view: A) how blue collar employers are judging the cooperation in the human-machine interaction and B) how a non-team member as an outsider judge the same cooperation.

596

Monday, 09:45 AM - 11:15 AM, Columbia 10   Track: Product Innovation and Technology Management

Contributed Session: Stakeholders, Projects & Product Development

Chair(s): Junguang Zhang

093-1727   The Progress of "Professor Privilege" in China's Universities

Xin Liu, Associate Professor, Southwest Jiaotong University, China

Some universities in China transfer a portion of IP rights to the employed inventors before the inventions are commercialized. The pilot reform has been backed up by some local governments in China. This paper systematically introduces and analyzes this experimental system's theoretical and practical background, legal theory, and policy logic.

093-1250   CEOs' Passion, Exploratory Innovation and Exploitative Innovation: The Moderating Role of Environmental Turbulence

Wenjun Cai, Student, University of Science and Technology of China, China

Jibao Gu, Professor, School of Management, University of Science and Technology of China, China

Jianlin Wu, Professor, School of Management, University of Science and Technology of China, China

Findings about whether CEOs' passion benefits firms' innovation remain inconsistent. Based on a two-stage survey of 144 firms in China, we investigate the moderating roles of market and technological turbulence between CEOs' passion, exploratory innovation and exploitative innovation. This study contributes to revealing contingency under which passion positively influences innovation.

093-0361 Determination of Project Buffer Based on the Activity Coupling

Junguang Zhang, Professor, University of Science and Technology Beijing, China
dan wan, Student, University of Science&Technology Beijing, China
Jianhua Yang, Professor, University of Science and Technology Beijing, China

This study investigates the impact of the coupling between activities on project duration performances. Based on an in-depth analysis of various project characteristics affecting activity coupling on the critical chain, we present a coupling-concentrated buffer determination framework, linking our results to buffer management theory.

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597 Monday, 09:45 AM - 11:15 AM, Columbia 11   Track: Inventory Management

Contributed Session: Inventory Control in Production and Warehouse Operations

Chair(s): Melda Ormeci Matoglu

093-0340 Optimal Scheduling of the AGVs in an Automated Warehousing System

Zheng Wang, Professor, Southeast University, China
Yajun Zhang, Student, Southeast University, China

Based on the queueing model of an automated warehousing system, we solve the automated guided vehicle (AGV) routing problem by approximate dynamic programming to minimize the products handling time. Besides, a dynamic AGV scheduling policy is developed based on the supervisory control theory of discrete event systems to avoid congestion.

093-0163 Effect of Live Video Image Analysis on Inventory Control on Production and Service Operations

Victor Pimentel, Assistant Professor, Niagara University, United States

The purpose of this study is to test the impact of a human-free inventory control system, using exclusively live video feed and pictures taken from mobile devices, on different inventory control systems. We tested our in-house counting software and its performance against human-run operations.

093-2018 The Capacitated Single Machine Lot Sizing Problem Revisited

Fayez Boctor, Professor, Universite Laval, Canada

In practice, the single machine lot sizing problem is to build a production plan to deliver given quantities of different products at given dates. The objective is to minimize the total cost while setups can be carried over to the next run if the same product is processed.

093-0742 The Economic Average Cost Brownian Control Problem

Melda Ormeci Matoglu, Assistant Professor, University of New Hampshire, United States
John Vande Vate, Professor, Georgia Institute of Technology, United States
Haiyue Yu, Independent Scholar, Independent Scholar, United States

We study a system where drift rate is dynamically controlled within available rates and instantaneous controls can be employed to manage the process. We minimize the average costs of holding and processing instantaneous controls and fixed costs for changing the drift rate. We prove optimal policy.

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598 Monday, 09:45 AM - 11:15 AM, Columbia 12   Track: Service Operations

Contributed Session: Capabilities and Competitiveness

Chair(s): Sukrit Pal

093-1563 Linking Service Concept to Customer Satisfaction and Moderating Role of Demographic Variables

Amit Sachan, Associate Professor, Indian Institute of Management Ranchi, India
Arindam Mukherjee, Assistant Professor, Indian Institute of Management Ranchi, India
Rajiv Kumar, Post Doc/Researcher, Indian Institute of Management Ranchi, India

This study links the core and peripheral components of service concept in e-commerce context to customer satisfaction and examine the moderating role of demographic characteristics. The findings show that customer satisfaction with core and peripheral attributes positively impacts the overall satisfaction and the relationship is moderated by customer characteristics.

093-1023 Attracting Low Cost Carriers by Airports: A Tale of Two Countries

Fani Pramuditya, Student, The University Of North Carolina At Greensboro, United States
Vidyaranya Gargeya, Professor, The University Of North Carolina At Greensboro, United States

Low-cost carriers (LCCs) have transformed the aviation business globally. Many researchers have studied the relationships between airports and LCCs in terms of how the LCCs generate airport revenue. This study presents the lessons learned from six different airports in attracting LCCs in a developed and a developing country.

093-0683 Organizational Dynamic Capabilities, Structure, and Responsiveness

Ritu Singh, Student, Indian Institute of Management Raipur, India
Parikshit Charan, Assistant Professor, Indian Institute of Management Raipur, India

Resource based views suggest that dynamic capabilities significantly improve the firms' responsiveness. Organizational structures may dwindle or boost the effect of dynamic capabilities by endowing greater or limited opportunities. This study investigates the effect of dynamic capabilities and structure on responsiveness by analyzing the data from 219 service companies.

093-2112   Do Team Member Communication and Project Manager's Network Embeddedness Complement in Aiding Technical Issue Resolution?

Sukrit Pal, Student, Michigan State University, United States

Anand Nair, Professor, Michigan State University, United States

Not many extant research research has looked into with-in team dynamics in Open Source Software (OSS) Development Platforms. We analyze how with-in team communication affects project performance in OSS context. We then analyze the moderating role of project managers' embeddedness in project network on the previous relationship.

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599   Monday, 09:45 AM - 11:15 AM, Monroe   Track: Humanitarian Operations and Crisis Management

Contributed Session: Modeling in Humanitarian Operations

Chair(s): Abhinav Khare

093-0201   Cash-Based-Interventions for Syrian Refugees in Turkey: A Multi-Objective Location-Routing Problem

Sibel Salman, Associate Professor, Koc University, Turkey

Ramez kIAN, Post Doc/Researcher, Nottingham Business School, United Kingdom

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

Gunes Erdogan, Reader, Bath Spa University, United Kingdom

Ehsan Sabet, Senior Lecturer, Loughborough University, United Kingdom

This research studies arguably the largest ongoing slow-onset man-made humanitarian disasters of Syrian refugees in Turkey. We develop an optimization algorithm to maximize the cash-based interventions' effectiveness while minimizing operational risk of the organizations. Real data of ten Turkish cities are used to report the impact of this study.

093-0470   Investigation of Optimal Allocation of Debris Collection Depots in Large-Scale Disasters in Japan

Fumiya Matsuura, Student, Tokyo Metropolitan University, Japan

Yasutaka Kainuma, Professor, Tokyo Metropolitan University, Japan

The objective of this study is to minimize debris collection time from disaster sites to primary collection depots. While considering their sides, the location of collection depots to store debris temporarily is important. Therefore, we prepared scenarios with collection depots at different locations, and performed numerical experiments using GEJE data.

093-1734   Data-Driven Transportation Contract Design for Aid Delivery

Feyza Sahinyazan, Post Doc/Researcher, Hec Montreal, Canada

Marie-Ève Rancourt, Assistant Professor, Hec Montreal, Canada

Vedat Verter, Professor, Mcgill University, Canada

Humanitarian organizations select their transportation providers through reverse auctions to decrease costs. However, this process is prone to abnormally low bids that hampers service level. We develop a data-driven framework to estimate rates based on past contracts in East Africa and demonstrate that service can be improved without incurring costs.

093-1819   Evaluating Disaster Risk Management & Response Processes Using Interval-Valued Intuitionistic Fuzzy Sets

Irem Otay, Assistant Professor, Okan University, Engineering Faculty, Turkey

Miguel Jaller, Assistant Professor, University of California Davis, United States

This study focuses on the evaluation of disaster risk management and response processes using a multi-expert multi-criteria decision making framework, based on an interval-valued intuitionistic fuzzy sets approach. The authors implemented the framework in a case study in Colombia and discussed sensitivity analyses that illustrate the robustness of the method.

093-2259   The Analysis of Last-Mile Relief Delivery on a Tree Network

Abhinav Khare, Student, University at Buffalo, United States

Rajan Batta, Professor, Suny At Buffalo, United States

Jee Eun Kang, Assistant Professor, Suny At Buffalo, United States

The last mile delivery in humanitarian relief supply often happens on a tree or an almost-tree network. We present a multi-period multi-modal relief delivery model incorporating a tree network for last mile delivery. To demonstrate the application of our approach we applied our model to the 2015 Nepal earthquake.

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600   Monday, 09:45 AM - 11:15 AM, Lincoln East   Track: Humanitarian Operations and Crisis Management

Contributed Session: Social Media in a Humanitarian Context

Chair(s): Kate Hughes

093-0483   Attention Capacity for Disasters on Social Media Platforms

Eunae Yoo, Assistant Professor, University of Tennessee Knoxville, United States

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

Bin Gu, Professor, Arizona State University Tempe, United States

We investigate how information about a humanitarian event spreads on social media platforms. Specifically, we examine how long users continue to post content relevant to a disaster and when attention begins to diverge to other topics. We utilize Twitter data from a natural experiment provided by the 2016 Ecuador earthquake.

093-0484   Scalability of Follower Bases on Social Media Platforms for Humanitarian Operations

Eunae Yoo, Assistant Professor, University of Tennessee Knoxville, United States

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

Bin Gu, Professor, Arizona State University Tempe, United States

Monday, 09:45 AM - 11:15 AM

Increasing the scale of humanitarian organizations' follower bases on social media platforms improves efficient information distribution. Our study evaluates what drives the expansion of organizations' follower bases in times of normalcy and emergency. We leverage dynamic Twitter network data that span one week before and after the 2016 Ecuador earthquake.

093-0607   Does Blatant Benevolence Increase Social Capital Online?

Jiayuan Zhang, Student, University of Rhode Island, United States
Koray Ozpolat, Associate Professor, University of Rhode Island, United States
Dara Schniederjans, Assistant Professor, University of Rhode Island, United States
Gulver Karamemis, Assistant Professor, University of Rhode Island, United States

We explore the kinds of prosocial behavior people usually post on social media. After modeling with an analytical framework, we plan to empirically test the relationship between posting the prosocial behavior and the attainment of social capital online.

093-1973   Developments in Media Reporting and Humanitarian Response

Steve Ross, Associate Professor, Columbia University, United States
Kate Hughes, Senior Lecturer, Stamford Int. University in Bangkok, Thailand
Heather Ross, Senior Proposal Writer , IntraHealth International, United States

Over the past decade the complex relationship between media reporting and humanitarian response has evolved due to the increased use of more informal reporting via social media. This presentation explores the changes since the publication: Ross, S. (2004) Towards New Understandings: Journalists & Humanitarian Relief Coverage (Fritz Institute).

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601 Monday, 09:45 AM - 11:15 AM, Lincoln West   Track: Empirical Research in Operations Management

Contributed Session: Big Data in Operations Management

Chair(s): Joshua Ignatius

093-2302   The Value Creation of Big Data Analytics in Supply Chain Management

Chaohong Xie, Student, Huazhong University of Science & Technology, China
Xianhao Xu, Professor, Huazhong University of Science & Technology, China
Yeming Gong, Professor, Business School, France

The study discusses two research questions: (1)How to build big data analytics capabilities and (2) How to integrate big data analytics capabilities and information sharing for building competitive advantage in supply chain mannagement. Through resource based views and IS success theory, we explore the value creation of big data analytics capabilities for supply chain.

093-1660   Big Data and Performance: Moderating Effects of Radical Innovation and Environmental Turbulence

Joshua Ignatius, Associate Professor, University of Warwick, United Kingdom
Ganna Pogrebna, Professor, University of Birmingham, United Kingdom
Marianna Marra, Lecturer, University of Essex, United Kingdom
Lalitha Dhamotharan, Post Doc/Researcher, University of Warwick, United Kingdom
Zhiquan Yeo, Student, University of Warwick, United Kingdom

This study investigates the effect of Big Data Structure (BDS) on performance. Our BDS framework includes vertical, sharing, horizontal, and hybrid structures. We test our framework using a unique dataset of all F1 cars that competed in the 976 races and 81 circuits between 1950 and 2017.

093-0031   Big Data for Innovation in Manufacturing

Jasna Prester, Associate Professor, University of Zagreb, Croatia

The article analyses big data usage in the manufacturing sector. We analysed by OLS regression the influence of six sources of big data and their influence on share of returns generated by new products. The results are robust and show the effects of each source of big data on innovation.

093-0194   Speeds of Adjustment for Downstream Trade Credit

Shih-Sian (Sherwin) Jhang, Assistant Professor, Department of Finance , Taiwan, Republic of China
Winston Lin, Professor, Suny At Buffalo, United States
Chui Chun Chiu, Student, National Sun Yat-Sen University, Taiwan, Republic of China
I-Hsuan Fang, Student, National Sun Yat-Sen University, Taiwan, Republic of China

We examine the potential drivers of downstream trade credit and investigate how macroeconomic conditions and firm-specific variables affect its adjustment behavior. We utilize the COMPUSTAT database to investigate the above issues for U.S. manufacturing firms from 1987 to 2017.

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602 Monday, 09:45 AM - 11:15 AM, Jefferson East   Track: Service Operations

Contributed Session: Service Management with Technology

Chair(s): Mike Dixon

093-0136   Measuring Banks' Digital Transformation Efficiencies Using Data Envelopment Analysis (DEA) and Exploring the Efficiency Determinants

Ting Cao, Student, York University, Canada
Murat Kristal, Associate Professor, York University, Canada
Wade Cook, Professor, York University, Canada

We seek to explore the impact of digitalization on banks' performance. We apply a two-stage approach, i.e., 1st Stage consists of the Data Envelopment Analysis (DEA) to measure banks' digital transformation efficiencies scores, and 2nd stage leverages the regression analysis to identify the determinants of digital transformation efficiencies.

093-0116   Operational Trends and Challenges in Project Management

David Bryde, Professor, ????, United Kingdom
Jane Dowson, Post Doc/Researcher, LIVERPOOL JOHN MOORES UNIVERSITY, United Kingdom
Maria Perez Ezcurdia, Lecturer, University of Navarre, Spain
Hans-Peter Schelkle, Professor, University of Applied Sciences HTWG Konstanz, Germany
Amin Tabassi, Associate Professor, University Sains Malaysia, Malaysia

At the operations-level, project management provides a service ensuring projects are delivered to the satisfaction of clients/stakeholders. We present empirical data of challenges facing project management in dealing with different types of complexity and we highlight how trends (i.e., technological developments) are impacting the project management function.

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093-0838   Role of Tourism IT Adoption and Tourism Risk Management Orientation in Developing Collaborative Assets

Santanu Mandal, Associate Professor, Amrita Vishwa Vidyapeetham, India

We explore the role of tourism IT adoption and tourism risk management orientation in the development of collaborative assets via planning, execution, and decision-making and in turn on sustainable tourism SC performance. Responses from 122 hotel and tour managers were analyzed in SmartPLS 2.0.M3 and found support.

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093-2282   The Future of Services in Light of Virtual and Augmented Reality: Questions and Speculations

Mike Dixon, Assistant Professor, Utah State Univ, United States

We question how the expanding technology of augmented and virtual reality may impact the underlying assumption of service operations - mainly that production and consumption are simultaneous. Will AR and VR allow customers to experience service in ways similar to live experiences?

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603 Monday, 09:45 AM - 11:15 AM, Jefferson West   Track: Supply Chain Risk Management

Contributed Session: Supply Chain Risk Management

Chair(s): John Ni

093-1576   Capturing Gray Swans in the Supply Chain

Tony Lynch, Student, University of Texas Rio Grande Valley, United States
Joo Jung, Associate Professor, University of Texas Rio Grande Valley, United States

Firms operating in today's global market are subjected to varying degrees of turbulence and uncertainty (Christopher & Lee, 2004). This paper examines the effects of a specific category of risk - Gray Swans - on firms' supply chain resilience. We develop and empirically test our Gray Swan scale to measure.

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093-0600   Optimal Subsidy Policy for Supply Process Improvement in Assembly Supply Chains

Chen Wang, Assistant Professor, Shanghai Business School, China
Zhe Yin, Assistant Professor, Shanghai University, China

We consider a decentralized assembly supply chain that consists of one manufacturer, one reliable supplier, and one unreliable supplier. Two subsidy policies are studied to improve the unreliable supplier's supply process: subsidy from the manufacturer and subsidy from the reliable supplier.

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093-1980   An Analytical Model for Supply Chain Risk Propagation

Yuhong Li, Assistant Professor, Old Dominion University, United States
Weiyong Zhang, Associate Professor, Old Dominion University, United States

Risk propagation is the phenomenon that a local disruption can propagate to other entities in the supply chain. Modeling risk propagation allows us to predict the indirect impacts of disruptions along the supply chain and better understand the inter-dependencies of entities. Here we propose an analytical model for risk propagation.

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093-1659   An Exploratory Study on Recall Effectiveness

Xiaowen Huang, Professor, Miami University, United States
John Ni, Assistant Professor, Miami University, United States

With the increase in product recalls, it is important to effectively manage the recall process so that firms can minimize the potential hazards to consumers caused by the recalled products. In this study, we propose and empirically validate a theoretical framework that would improve the effectiveness in a recall process.

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604 Monday, 09:45 AM - 11:15 AM, Georgetown East   Track: Supply Chain Risk Management

Contributed Session: Supply Chain Disruption Impact

Chair(s): Christopher Kwaramba

093-0837   An Empirical Analysis of the Relationship Between Disruptions and Supply Network Changes

Sangho Chae, Assistant Professor, Tilburg University, Netherlands
Canan Kocabasoglu Hillmer, Senior Lecturer, Cass Business School, United Kingdom
Byung-Gak Son, Senior Lecturer, Cass Business School, United Kingdom

This paper investigates if a firm mitigates risk of supply disruptions by intentionally reconfiguring its supply network after experiencing a major catastrophic disruption. We investigate the changes in supply networks of firms affected by a catastrophic disruption caused by 2011, Japanese Earthquake and Thai Flood to answer this question.

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093-1989   IV-Bag Shortage and a Deadly Flu Season: Supply Chain Risk Management Lessons

Janaina Siegler, Assistant Professor, Butler University - Lacy School of Business, United States
Antonio Rodrigues, Assistant Professor, Juiz de Fora Federal University, Brazil

Ricardo Martins, Professor, Federal University of Minas Gerais, Brazil

How has the disruption in the IV-bags supply chain during hurricane Maria in Puerto Rico, 2017 may have affected the number of deaths caused by the 2017/2018 flu season in the U.S.? A hospital case is used to illustrate unexpected strong relationships and outcomes for health care supply chain risk management.

093-2327   The Impact of Disruptive Events on Resilience Strategies

Camil Martinez, Post Doc/Researcher, ????, Colombia

John-Patrick Paraskevas, Assistant Professor, Miami University, United States

This study looks at the impact of supply chain disruptive events on a firm's supply chain resilience strategies. Two resilience strategies are considered: business continuity planning and recovery time. Using a sample of 159 publicly traded firms, our findings indicate that external and internal events have different effects on strategy.

093-0316   Examining the Effect of Negative and Subsequent Positive Supply Chain Announcements on Shareholder Value

Christopher Kwaramba, Assistant Professor, East Carolina University, United States

Jon Kirchoff, Associate Professor, East Carolina University, United States

We examine the impact on shareholder value of positive announcements about supply chain glitches in the aftermath of negative announcements concerning the same glitches.

605

Monday, 09:45 AM - 11:15 AM, Georgetown West   Track: Retail Operations

Contributed Session: Returns and waste aspects in retail

Chair(s): Nicole Perez Becker

093-1545   Using By-Product Synergy and Inventory Pooling to Reduce Waste in Grocer Stores

Zhenyang Shi, Student, Shanghai Jiao Tong University, China

We study the by-product synergy and inventory pooling in a retail grocer setting, where the procurement and processing decisions of fresh produce and prepared food are jointly planned to reduce both cost and waste. Different operational models are analyzed with the optimal inventory policies derived and economic/environmental benefit identified.

093-0309   Taking Stock of Consumer Returns: A Review and Classification of the Literature

Huseyn Abdulla, Student, Texas A&M University College Station, United States

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

James Abbey, Assistant Professor, Texas A&M University College Station, United States

Through the lens of a novel conceptual framework, we review and classify the interdisciplinary and multi-method research in the growing domain of consumer return policy design. Our examination of the state of the literature reveals significant opportunities for future research and exposes apparent disconnects between research and practice.

093-2315   Strategic Stockpiling in the Presence of Waste Cost

Nicole Perez Becker, Student, University of Luxembourg, Luxembourg

Benny Mantin, Professor, University of Luxembourg, Luxembourg

We model the stocking decisions of a seller and its customers, who face uncertainty about their own consumption rates for a perishable good over a two-period horizon. We characterize the conditions leading to strategic consumer stockpiling and evaluate the impact of waste cost on consumers' and sellers' inventory decisions.

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Monday, 09:45 AM - 11:15 AM, Cabinet   Track: Sustainable Operations

Contributed Session: Empirical studies in Sustainable Operations (2)

Chair(s): Feng Cheng

093-0846   Quality of the Corporate Social Responsibility Report and Company Performance

Lujie Chen, Associate Professor, Xi'an Jiaotong-Liverpool University, China

Yang Wang, Student, Xi'an Jiaotong-Liverpool University, China

Xiande Zhao, Professor, China Europe International Business School, China

Steve Melnyk, Professor, Michigan State University, United States

Yixuan Xu, Student, China Europe International Business School, China

We examine how the quality of CSR reports affects company performance. Drawing on the Structure Equation Model (SEM) and economic model, this analysis explores panel data of Chinese manufacturing firms over the period from 2008 to 2018.

093-1578   The Impact of Financial Slack on Corporate Social Responsibility: Evidence From China

Jinan Shao, Student, Zhejiang University, China

Kee-Hung Lai, Associate Professor, The Hong Kong Polytechnic University, China

Yongyi Shou, Professor, Zhejiang University, China

This study investigates the effect of financial slack on corporate social responsibility (CSR) practices implementation. Furthermore, this study examines the moderating role of state ownership and political connections in the financial slack - CSR relationship. Secondary data on listed Chinese ?rms from 2008 to 2016 are used to test these relationships.

093-2107   Make Your Supplier Sustainability Sustainable

Feng Cheng, Student, Arizona State University, United States

Kevin Dooley, Professor, Arizona State University Tempe, United States

Monday, 09:45 AM - 11:15 AM

While the public and buying firms push for suppliers' sustainability improvements, the economic benefits of such improvements at supply chain level (i.e., buyer-supplier pair) are not clear. Our paper investigates such economic implications and uncover the pathways that can benefit the supply chains using archival data.

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