2 - The Moderating Role of "RMO" on "MO" and Business Performance Linkage in Service Context

Jashim Khan, Lecturer, Auckland University of Technology, Wellesley St, Campus, Auckland, Nt, 1026, New Zealand, jashim.khan@aut.ac.nz

This paper explores the blend of relationship marketing orientation (RMO) and market orientation (MO) in service sector by controlling the direct impact of RMO on business performance model. It is a descriptive and theoretical analysis, and thus secondary data from previous studies are used as comparative analysis for examination and discussion. The findings indicate that "RMO" strengthens "MO" and business performance linkage among service firms. .

3 - Determinants of Purchase Intentions for Cell Phones Among College Students

Lemaro Thompson, MBA Student, Savannah State University, College of Business Administration, 3219 College Street, Savannah, GA, 31404, United States of America, lthomps5@student.savannahstate.edu, Ulysses Brown

This research explores the purchase intentions and its antecedents among college students in the cell phone industry. Using structural equation modeling to evaluate the hypotheses, we examine the factors that influence purchasing intentions and brand loyalty. Findings indicate that dispositional constructs influence both outcome variables in our model.

4 - B2B Customer Recommendations Based on a Planned Purchasing Prediction Model

Lynd Bacon, President, Loma Buena Associates, P.O. Box 620960, Woodside, CA, 94062-0960, United States of America, lbacon@lba.com, Peter Lenk, C. Michael Troutman, Ashwin Sridhar

We describe a model-based sales support system that assumes customers periodically review their inventory levels, reorder when levels fall below preset points and based on expected future demands. Our model derives inter-order time distributions as functions of time-varying previous demand. We use hierarchical Bayes methods to make predictions for a large number of SKUs, estimate splined demand functions, incorporate effects of sales calls, and accommodate customer heterogeneity.

5 - Optimum Premium to Insure Shipments by Logistics Organizations

Jayprakash Patankar, Professor of Management, The University of Akron, Department of Management, College of Bus. Administration, Akron, OH, 44325-4801, United States of America, jgp@uakron.edu, Amitava Mitra

Suppliers of parts or sub-assemblies may be geographically dispersed, which necessitates delivery of shipped goods in an un-damaged condition. Here, we assume that the propensity of a customer to insure a shipment is based on its value. Optimum premium to charge for such insurance is determined.

■ WB48

H-Sapphire Green Room, Fourth

Advances in Appointment Scheduling under Uncertainty

Cluster: Service Operations Management
Invited Session

Chair: Stephen Lawrence, Associate Professor, University of Colorado, Leeds School of Business, 419 UCB, Boulder, CO, 80309-0419, United States of America, Stephen.Lawrence@colorado.edu

1 - Traditional vs. Open-access Appointment Scheduling with Multiple Sources of Uncertainty

Rachel Chen, Assistant Professor, University of California at Davis, rachen@ucdavis.edu, Lawrence W. Robinson

This paper uses stochastic programming to compare traditional and open-access appointment scheduling policies in the presence of multiple sources of uncertainty, including random service times, patient no-shows, and unscheduled walk-ins. We examine the degree to which these uncertainties affect the relative efficacy of these two scheduling policies.

2 - Optimal Outpatient Scheduling with Emergency Arrivals

Paulien Out, PhD Student, VU University, De Boelelaan 1081a, 1081 HV, Amsterdam, Netherlands, pot300@few.vu.nl, Ger Koole

We present an efficient method for scheduling outpatient appointments to a facility with emergency arrivals. A weighted sum of the waiting times, idle times and tardiness is minimised. No-shows are allowed. We assume Poisson arrivals for emergency patients and general iid service times. We will present numerical examples.

3 - Appointment Scheduling with Variable Service Times

Stephen Lawrence, Associate Professor, University of Colorado, Leeds School of Business, 419 UCB, Boulder, CO, 80309-0419, United States of America, Stephen.Lawrence@colorado.edu, Linda Laganga

We extend previous results regarding appointment scheduling in health care clinics to include appointments with variable service times. Our algorithm allows a clinic to schedule patient appointments so that aggregate clinic utility is maximized, balancing clinic productivity benefits with patient waiting and clinic overtime penalties. Computational experiments demonstrate the efficacy of our algorithm.

■ WB49

H-Room 300, Third Floor

Design and Analysis of Distribution Supply Chains

Cluster: Managing Disruptions in Supply Chains
Invited Session

Chair: Srinagesh Gavirneni, Cornell University, sg337@cornell.edu

1 - An Analysis of Coordination Mechanisms for the U.S. Cash Supply Chain

Mili Mehrotra, PhD Student, The University of Texas at Dallas, 800 West Campbell Road, School of Management, Richardson, United States of America, mxm057000@utdallas.edu, Milind Dawande, Vijay Mookerjee, Chelliah Sriskandarajah

Through its new cash re-circulation policy, the Federal Reserve of the United States intends to induce Depository Institutions to effectively re-circulate cash so that the societal cost of providing cash to the public is minimized. We first analyze the efficacy of the Fed's current policy as a coordinating mechanism and then propose and analyze a fundamentally different mechanism.

2 - An Assessment of the Effects of Different Inventory Record Inaccuracy

Thomas Kull, Assistant Professor, Arizona State University, P.O. Box 874076, Tempe, AZ, 85287-4706, United States of America, Thomas.Kull@asu.edu, Elliot Rabinovich, Mark Barratt

Issues related to inventory record inaccuracy (IRI) have gained interest, yet research is needed regarding IRI in distribution operations and on the dynamics of IRI. We consider effects on a distributor-retailer dyad experiencing various dynamic IRI patterns. Using observations from a DC, we build a discrete-event simulation, conduct experiments and test if IRI patterns have expected effects. Implications are drawn for managers while suggesting methods for improvement.

3 - Using Retailer Order Commitments to Improve Supply Chain Performance

Lawrence W. Robinson, Associate Professor of Operations Management, Cornell University, Johnson Graduate School of Management, 433 Sage Hall, Ithaca, 14853, United States of America, lwr2@cornell.edu, Srinagesh Gavirneni

We evaluate the effectiveness of order commitment policies in decentralized supply chains, and establish that these strategies are effective whenever the supplier's cost is at least 29.3% of the total supply chain cost. This benefit increases as the supplier's share of the total supply chain cost increases. Order commitment policies will be more effective when end-customer demands are positively correlated across retailers, and less effictive when they are are positively correlated across time.

■ WB50

H-Room 302, Third Floor

Lot Sizing I

Contributed Session

Chair: Changyuan Yan, Drexel University, Rm 229, 101N 33rd St, Philadelphia, PA, 19104, United States of America, cy66@drexel.edu

1 - A Relaxation Approach for Solving the Stochastic Lot Sizing Problem with Service Level Constraints

Ulas Ozen, Researcher, Alcatel-Lucent / Bell Labs, Alcatel-Lucent, Blanchardstown Industrial Park, Dublin, 15, Ireland, uozen@alcatel-lucent.com, Armagan Tarim, Mustafa Kemal Dogru, Roberto Rossi

This paper provides an efficient computational approach to solve a mixed integer programming model developed for calculating the parameters of an (R,S) policy

in a finite horizon with non-stationary stochastic demand and service level constraints.

2 - Faster Primal-dual Algorithms for the Economic Lot-sizing Problem

Dan Stratila, RUTCOR, Rutgers University, 640 Bartholomew Rd, Rm 107, Piscataway, NJ, 08854, United States of America, dstrat@rci.rutgers.edu, Mihai Patrascu

Consider the classical lot-sizing problem, introduced by Manne (1958), and Wagner and Whitin (1958). Since its introduction, researchers have worked on faster algorithms for it. Federgruen and Tzur (1991), Wagelmans et al (1992), and Aggarwal and Park (1993) independently obtained O(n log n) algorithms. Recently, Levi et al (2006) developed a primal-dual algorithm. Building on the work of Levi et al, we obtain a fast primal-dual algorithm for the lot-sizing problem and analyze its running time.

3 - ATSP-based Models for a Synchronized Lot Sizing and Scheduling Problem at the Soft Drink Industry

Deisemara Ferreira, Universidade Federal de Sao Carlos, Rod. Washington Luis - Km 235, Sao Carlos, Brazil, deise@dep.ufscar.br, Alistair Clark, Bernardo Almada Lobo, Reinaldo Morabito

We present novel formulations based on the travelling salesman problem to solve a lot sizing and scheduling problem arising in the soft drink industry. Computational experiments show a remarkable improvement of the solutions obtained by the proposed models over real-world industrial solutions.

4 - Economic Lot Sizing Problem with Perishable Items

mehmet onal, Florida International University, 10555 West Flagler Street, Miami, FL, 33131, United States of America, monal@ufl.edu, Edwin Romeijn

We consider an extension of the classical dynamic economic lot sizing problem where items perish in a certain number of periods. This number can depend on the period in which the item was procured and the supplier it was procured from. We distinguish between (i) settings in which the retailer has the power to supply customer demands in each period with any non-perished items, and (ii) settings in which the customer has the power to select from the collection of available items.

5 - An Integrated Lot Sizing Model for Deteriorating Items

Changyuan Yan, Drexel University, Rm 229, 101N 33rd St, Philadelphia, PA, 19104, United States of America, cy66@drexel.edu, Yi Liao, Avijit Banerjee

The objective of this study is to develop an integrated 2-echelon lot sizing model for a deteriorating item. With an infinite production rate, we relax the traditional assumption of a low deterioration rate and develop a methodology for obtaining an exact optimal solution. A numerical example illustrates our proposed approach.

■ WB51

H-Room 303, Third Floor

Engineering Applications of Stochastic Programming

Sponsor: Optimization/Computational Optimization and Software(Joint Cluster Computing)
Sponsored Session

Chair: Victor M Zavala, Postdoctoral Researcher, Argonne National Laboratory, 9700 S Cass Ave, Argonne, IL, 60439, United States of America, vzavala@mcs.anl.gov

1 - On the Improvement of the Call Center Arrival Rate Prediction by Incorporating the Weather Forecast

Hideki Yamanaka, Fujitsu Laboratories Ltd., 4-1-1 Kamikodanaka, Nakahara-ku, Kawasaki, 211-8588, Japan, hyamanaka@jp.fujitsu.com

Since the number of call center agents mostly determining the cost of their center is derived from an arrival rate prediction, the improvement of its precision is crucial. However it is hard for usual approaches to improve the precision further, we focused on the change of customers' dialing behavior caused by the degree of rain fall and developed a new arrival rate prediction tool incorporating the customer population and the weather forecast of each region.

2 - New Product Development Planning Using Stochastic Programming

Christos Maravelias, Assistant Professor, University of Wisconsin - Madison, 1415 Engineering Drive, Madison, WI, 53562, United States of America, christos@engr.wisc.edu, Matthew Colvin

We present a multi-stage stochastic programming formulation for the planning of research and development (R&D) activities, with an emphasis in the pharmaceutical pipeline. We discuss aspects such as outlicensing, resource planning, and we develop a) theoretical properties that allow us to formulate smaller and tighter models, b) an infinite-horizon approximation, c) a novel branch-and-cut algorithm, and d) a rolling horizon approach.

3 - Optimal Operation and Contract Planning under Uncertainty with Rigorous Models for Air Separation

Carl Laird, Assistant Professor, Texas A&M University, United States of America, carl.laird@tamu.edu, Yu Zhu

We study the optimal planning and operation using a rigorous model of a cryogenic air separation system with multiple uncertain product demands. Loss functions are adopted to evaluate the expectation of plant profit and formulate a probabilistic fill rate constraint for contractual responsibilities. Single and multiple period formulations are solved by means of our recently developed parallel nonlinear programming algorithm.

4 - Risk Management for a Global Chemical Supply Chain

Fengqi You, Graduate Student, Carnegie Mellon University, 5000 Forbes Ave, Pittsburgh, PA, 15213, United States of America, yfq@cmu.edu, Ignacio Grossmann

In this work, we consider the risk management of a global multi-product chemical supply chain under various uncertainties. We will discuss the model formulation, computational strategies and simulation method. Real-world industrial applications with up to 12,000 uncertain parameters are investigated, and the economic benefits of considering uncertainties are also illustrated.

5 - Uncertainty Quantification and Stochastic Programming for Weather Forecast-Based Operations

Victor M Zavala, Postdoctoral Researcher, Argonne National Laboratory, 9700 S Cass Ave, Argonne, IL, 60439, United States of America, vzavala@mcs.anl.gov, Mihai Anitescu

In this talk, we summarize recent developments in the area of weather forecast-based optimization of industrial systems. We discuss issues related to the integration of advanced weather forecast models, uncertainty quantification techniques, and on-line stochastic programming algorithms. Numerical simulation studies are used to illustrate the economic benefits of the proposed framework.

■ WB52

H-Room 304, Third Floor

New Topics on OM/Marketing Interface

Cluster: Operations Management/Marketing Interface
Invited Session

Chair: Max Shen, Professor, University of California-Berkeley, Dept of IEOR, Berkeley, CA, 94704, United States of America, shen@ieor.berkeley.edu

Co-Chair: Shan Li, PhD Candidate, University of California-Berkeley, Dept of IEOR, Berkeley, CA, United States of America, lisapine@berkeley.edu

1 - Revenue Management with Strategic Customers: Last Minute Selling and Opaque Selling

Kinshuk Jerath, Assistant Professor of Marketing, Tepper School of Business, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA, 15213, United States of America, kinshuk@andrew.cmu.edu, Serguei Netessine, Senthil Veeraraghavan

Using a stylized economic model, this paper attempts to explain and compare the benefits of last-minute sales directly to consumers vs. through an opaque intermediary (such as Hotwire or Priceline), which hides some attributes of the tickets it sells.

2 - Incorporating Social Contagion into Cusotmer Lifetime Value Analysis

Shan Li, Ph.D. Candidate, University of California-Berkeley, Dept of IEOR, Berkeley, CA, United States of America, lisapine@berkeley.edu, Max Shen, Teck-Hua Ho

In this talk, we present a model to characterize customer lifetime value in terms of their purchase value and their influential value induced by word-of-mouth communication. We then propose an effective sample distribution scheme and show how businesses should launch market activities by taking customer lifetime value into account.

3 - A Multi-category Model of Physician Prescriptions and Detailing

Xiaojing Dong, Santa Clara University, Lucas Hall, 500 El Camino Real, Santa Clara, CA, 95053, United States of America, xdong1@scu.edu, Pradeep Chintagunta, Puneet Manchanda

An important issue facing firms marketing several prescription drugs in different categories to the same physicians is to understand the responsiveness of these physicians to detailing across categories. In this paper we propose a multicategory model of prescription while accounting for the endogeneity of firms' detailing efforts. From a substantive perspective, we are able to quantify the impact of a multicategory analysis when segmenting physicians based on their responsiveness to detailing.