

Conference Organizing Committee:

Chung-Lun Li (Chairman)
The Hong Kong Polytechnic University

Wei-yu Kevin Chiang
City University of Hong Kong

Gang Hao
City University of Hong Kong

Kee-hung Lai
The Hong Kong Polytechnic University

Chung-Yee Lee
The Hong Kong University of Science and Technology

Janny Leung
The Chinese University of Hong Kong

John J. Liu
The Hong Kong Polytechnic University

Fugee Tsung
The Hong Kong University of Science and Technology

Benjamin Yen
The University of Hong Kong

Andy Yeung
The Hong Kong Polytechnic University

Sean X. Zhou
The Chinese University of Hong Kong

Paper Reviewers:

Biyu Chen, The Hong Kong Polytechnic University

Fei Gao, The Chinese University of Hong Kong

Xiting Gong, Peking University

Zhiling Guo, University of Maryland

Esther Lee, The Hong Kong Polytechnic University

Kwai Sun Philip Leung, The Chinese University of Hong Kong

Guangwu Liu, City University of Hong Kong

Chris Lo, The Hong Kong Polytechnic University

Karthik Balkrishnan Natarajan, City University of Hong Kong

Jinwen Ou, Jinan University

King-Wah Pang, The Hong Kong Polytechnic University

Haiqing Song, Sun Yat-sen University

Allie Tang, The Hong Kong Polytechnic University

Zhijie Tao, The Chinese University of Hong Kong

Christina W.Y. Wong, The Hong Kong Polytechnic University

Jenny Xin, The Hong Kong Polytechnic University

Yi Yang, The Chinese University of Hong Kong

Eileen Yue, The Hong Kong Polytechnic University

Sponsoring and Supporting Organizations:

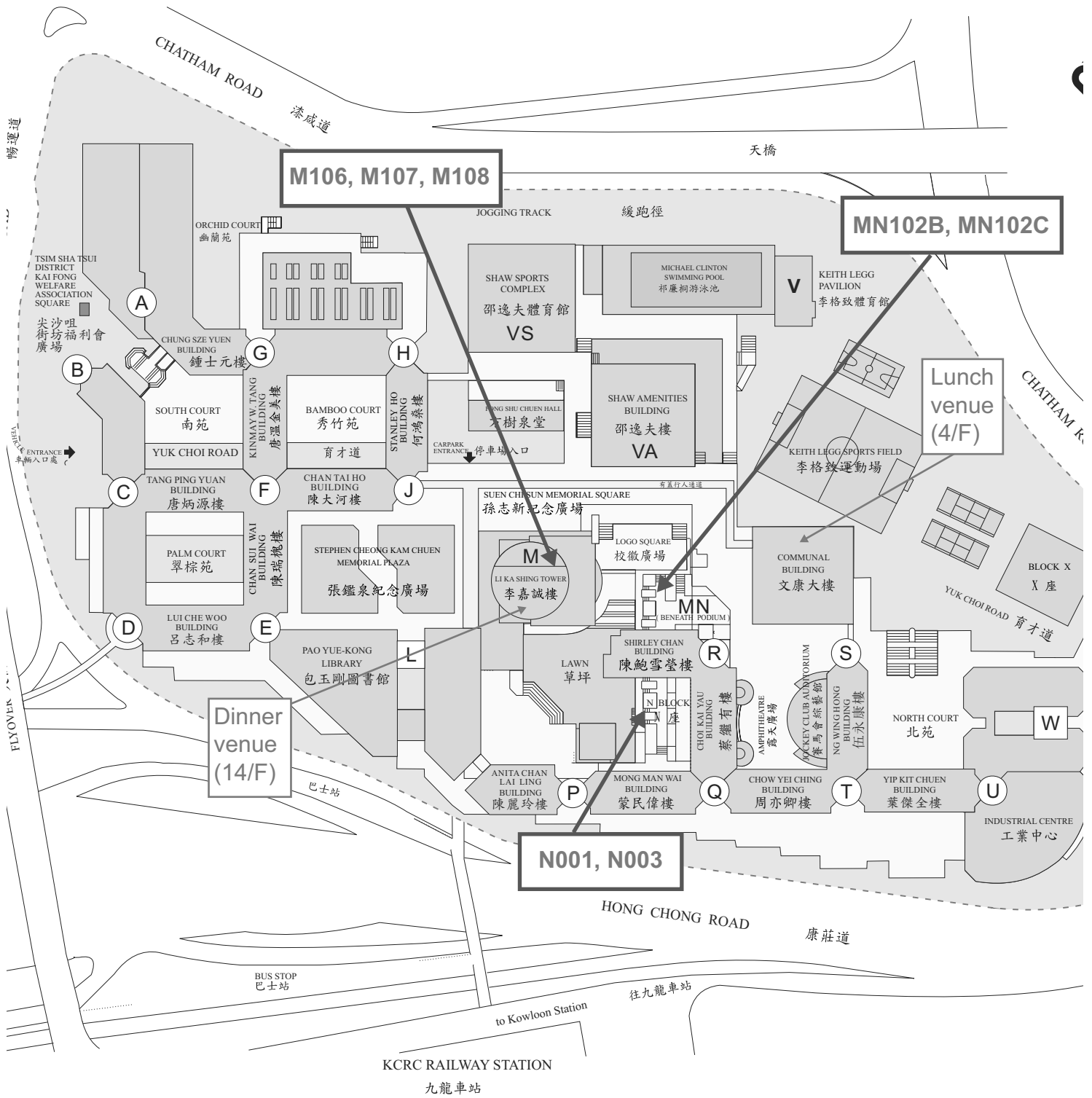
Department of Logistics and Maritime Studies,
The Hong Kong Polytechnic University

Department of Systems Engineering and Engineering Management,
The Chinese University of Hong Kong

Department of Management Sciences,
City University of Hong Kong

Department of Industrial Engineering and Logistics Management,
The Hong Kong University of Science and Technology

CAMPUS MAP



CONFERENCE SCHEDULE

Time	Program					
08:00 – 09:00	Registration & Welcome Reception Venue: N001 (Outside Area)					
09:00 – 09:15	Opening Ceremony Venue: N003					
09:15 – 10:15	Keynote Presentation Venue: N003					
10:15 – 10:25	Photo-taking Venue: N001 (Outside Area)					
10:25 – 10:50	Coffee Break Venue: N001 (Outside Area)					
10:50 – 12:20	Session A1 Venue: N001	Session A2 Venue: M106	Session A3 Venue: M107	Session A4 Venue: M108	Session A5 Venue: MN102B	Session A6 Venue: MN102C
12:20 – 13:30	Lunch Venue: Staff Restaurant, 4/F, Communal Building					
13:30 – 15:00	Session B1 Venue: N001	Session B2 Venue: M106	Session B3 Venue: M107	Session B4 Venue: M108	Session B5 Venue: MN102B	Session B6 Venue: MN102C
15:00 – 15:30	Coffee Break Venue: N001 (Outside Area)					
15:30 – 17:00	Session C1 Venue: N001	Session C2 Venue: M106	Session C3 Venue: M107	Session C4 Venue: M108	Session C5 Venue: MN102B	
17:05 – 18:00	Panel Discussion Venue: N001					
18:05 – 20:15	Conference Dinner (and Best Student Paper Award Presentation) Venue: Four Seas Restaurant, 14/F, Li Ka Shing Tower					

KEYNOTE PRESENTATION

(9:15 am – 10:15 am; N003)

Building Supply Chain Excellence in Emerging Economies

Hau L. Lee

Thoma Professor of Operations, Information and Technology
Graduate School of Business, Stanford University

Abstract: Supply chain management in emerging economies is often extremely challenging, due to the poor infrastructure, cultural and regulatory barriers, high levels of uncertainties, and the rapidly changing environment. Such challenges give rise to a rich set of research problems. This talk will highlight some important research problems that arise from supply chain management in emerging economies, drawing upon some examples based on China and others. I will also share my perspective on how to conduct impactful research building on such problems.

Biography: Hau L. Lee is the Thoma Professor of Operations, Information, and Technology at the Stanford Graduate School of Business. His areas of specialization include supply chain management, information technology, global logistics system design, inventory planning, and manufacturing strategy. He is the founding and current Codirector of the Stanford Global Supply Chain Management Forum, an industry-academic consortium to advance the theory and practice of global supply chain management.

Professor Lee has published widely in journals such as *Management Science*, *Operations Research*, *Harvard Business Review*, *Sloan Management Review*, *Supply Chain Management Review*, *IIE Transactions*, and *Interfaces*, etc. He has served on the editorial boards of many international journals, such as *Operations Research*, *Manufacturing and Service Operations Management*, *IIE Transactions*, *Supply Chain Management Review*, *Sloan Management Review*, and the *Journal of Production and Operations Management*. From 1997-2003, he was the Editor-in-Chief of *Management Science*.

Professor Lee received the Harold Lardner Prize for International Distinction in Operations Research, Canadian Operations Research Society, 2003. He was elected a Fellow of Manufacturing and Service Operations Management, INFORMS, 2001; Production and Operations Management Society, 2005; and INFORMS, 2005. In 2005, he was President-Elect of the Production and Operations Management Society. His article, "The Triple-A Supply Chain," was the Second Place Winner of the McKinsey Award for the Best Paper in 2004 in the *Harvard Business Review*. In 2004, his coauthored paper in 1997, "Information Distortion in a Supply Chain: The Bullwhip Effect," was voted as one of the 10 most influential papers in the history of *Management Science*.

Professor Lee has consulted extensively in the public and private sectors. He is a cofounder of several supply chain and price optimization software companies: NON-STOP Solutions, DemandTec, SignalDemand, and TrueDemand. He is on the board and advisory board of several logistics services and supply chain software companies. He has also given executive training workshops on supply chain management and global logistics in Asia, Europe, and America.

Professor Lee obtained his BSocSc degree in Economics and Statistics from the University of Hong Kong in 1974, his MSc degree in Operational Research from the London School of Economics in 1975, and his MS and PhD degrees in Operations Research from the Wharton School of the University of Pennsylvania in 1983.

SESSION A1

10:50 am – 12:20 pm; Room N001

Supply Chain Management I

Session Chair: Xianghua Gan (The Hong Kong Polytechnic University)

1. Optimal bulk to case product mix in a supply chain

Jooyol Maeng (Purdue University)

Abstract: The study is on a leading wine bottle manufacturer that provides a high level of customization and services for its customers. It operates under the make-to-order system, but the highly volatile nature of demand on wine industry often creates a huge discrepancy between sales orders and actual demands, which results in frequent order cancellations. Using mixed integer programming method on company's data, the items of poor forecast are obtained and their characteristics are studied. Heuristic methods which follow managerial interpretations are also given. This problem is widely applicable in different industries.

2. Supply chain collaboration based on information sharing: A comparative study*

Linhui Li (Southwestern University of Finance and Economics); Hanpeng Zhang (Southwestern University of Finance and Economics); Sheng Li (Southwestern University of Finance and Economics); Jiao Guo (Southwestern University of Finance and Economics)

Abstract: The effects of supply chain coordination strategies under diverse conditions are different. This paper presents two simulation models based on information sharing in a three-echelon supply chain, which represent two supply chain coordination strategies, namely vendor managed inventory (VMI) and collaborative planning, forecasting, and replenishment (CPFR). Using these simulation models, which are under conditions of demand uncertainty, lead time, and production capacity, we get the following observations: Compared to VMI, CPFR could get higher service level with lower cost under all conditions. However, the performance of VMI and CPFR is very close when lead times are short and production capacity is tight. The result is significant for supply chain managers to determine appropriate collaboration levels for supply chains.

3. Responding to supply disruptions in disasters

Amiya K. Chakravarty (Northeastern University)

Abstract: The uncertainties associated with disasters, characterized by a demand -surge, create complexities in response decisions. The appropriate level of relief effort would depend upon a multilateral tradeoff between disaster severity, infrastructure disruptions, demand surge, cost of redundancies, and the social cost. The relief providers must also work in collaboration with the retailers and infrastructure providers. We study a hybrid approach for acquisition and delivery of relief supplies

that is part proactive and part reactive, and discuss implications for pricing and capacity acquisition. Further, we establish how infrastructure contracts may be leveraged for reducing the social cost of disaster.

4. Contract design for SCQM about unobservable behaviors and external failure sharing

Qin Su (Xi'an Jiaotong University and State Key Laboratory for Manufacturing Systems Engineering); Qiang Liu (Xi'an Jiaotong University and State Key Laboratory for Manufacturing Systems Engineering); Ling X. Li (Old Dominion University)

Abstract: Contract design for supply chain quality management (SCQM) is pursued in circumstances characterized by the behavior observabilities of a manufacturer and a supplier and three factors interactively influencing external failure sharing, i.e. the verifiability of external failure, the separability of final product architecture and the relationship of two parties. Contracts encompassing the least items to guarantee supply chain coordination are derived by game-theoretical analysis. It is found that unobservable inspection and unobservable processing are corresponding with different conditions to coordination independently, and some extra conditions will be needed to guarantee coordination in case some information systems are installed.

5. Optimal contract under countervailing incentives

Qi Feng (University of Texas at Austin); Xianghua Gan (The Hong Kong Polytechnic University)

Abstract: We revisit the celebrated paper by Maggi and Rodriguez-Clare (Journal of Economic Theory, volume 66, 1995), who provide a unified framework to characterize the optimal contracts under countervailing incentives based on whether the agent's reservation utility is highly convex, slightly convex, linear, or concave in his private parameter. We demonstrate that their characterization is incomplete in two aspects. First, there is an intermediate case between the highly-convex contract and the slightly-convex contract in which no information rent is paid to the agent regardless of his private parameter. In addition, the optimal contract may also be first-best. Second, we demonstrate that the characterization of the optimal contract depends on the relation between the principal's marginal utility and the agent's marginal reservation utility. In other words, the curvature of the reservation utility alone may not be enough to determine the form of the contract.

* Full paper available in Conference Proceedings

SESSION A2

10:50 am – 12:20 pm; Room M106

Financial Modeling

Session Chair: Ning Cai (The Hong Kong University of Science and Technology)

1. Risk adjusted portfolio procurement management: Option contracts with dynamic execution price

Qi Fu (The Hong Kong University of Science and Technology); Chung-Yee Lee (The Hong Kong University of Science and Technology); Chung Piaw Teo (National University of Singapore)

Abstract: This paper studies a portfolio procurement problem, using a set of option contracts as well as the random spot market to meet the uncertain demand. This is the Procurement Risk Management (PRM) approach pioneered by HP. Recently, HP has moved from the use of fixed option execution price model to a dynamic option execution price model. We analyze the optimal portfolio procurement strategy in this setting, when the objective is to minimize the CVaR value of the portfolio procurement cost. We also compare this dynamic option execution price model with the fixed option execution price model. This research is supported in part by Hong Kong RGC Earmark Grant 615607.

2. Comonotonic approximation for dynamic portfolio selection with periodic investments

Liang Xu (The Hong Kong Polytechnic University); Zhou Xu (The Hong Kong Polytechnic University)

Abstract: This paper studies a dynamic portfolio selection problem with periodic investments on risk-free and/or risky assets. It aims to maximize the expected terminal wealth, under a Value-at-Risk (VaR) constraint on the quantile of the terminal wealth for risk control. The VaR constraint is difficult, because the terminal wealth is often treated as a sum of lognormal random variables, whose distribution function is hard for analysis. We propose a novel approach to use comonotonic approximations to derive a tight lower bound on the terminal wealth. From this, we can decompose the problem into two sub-problems, which reduces the complexity significantly.

3. Hedging downside risk in the Chinese metal futures market in the presence of asymmetric basis effect

Yiwen Su (The Chinese University of Hong Kong); Philip Leung (The Chinese University of Hong Kong); Frank Chen (The Chinese University of Hong Kong)

Abstract: The paper examines the asymmetric effect of basis on hedging downside risk in Chinese metal futures market. The dynamic conditional correlation bivariate GARCH (BGARCH-DCC) framework is utilized to model the joint dynamics of the spot and futures returns. We implement an approach that takes into consideration the asymmetric basis effect on hedging. Two modified models are proposed to account for the symmetric and

asymmetric basis effects. The zero-VaR hedge ratio is employed to investigate the effect. Moreover, we also extend the zero-VaR ratio from the constant correlation assumption to the DCC model. The empirical results demonstrate that the asymmetric basis effect must be regarded as an important factor in hedging downside risk.

4. Numerical pricing of quantile options with jump risk*

Ning Cai (The Hong Kong University of Science and Technology)

Abstract: Due to the ongoing financial crisis, occupation time-related options have attracted much attention from both researchers and investors because some actively traded security derivatives, e.g., the accumulators, depend greatly on the occupation time of the underlying asset price, therefore being susceptible to the changing global economy. By incorporating jump risk into modeling, i.e., under Kou's double-exponential jump diffusion model, we develop a Laplace transform-based method to price one particular type of occupation time-related option—quantile options with either fixed- or floating-strikes. Numerical results indicate our pricing method is fast and accurate.

* Full paper available in Conference Proceedings

SESSION A3

10:50 am – 12:20 pm; Room M107

Empirical Studies in Operations Management I

Session Chair: Jie Yang (University of Houston-Victoria)

1. Moderating effects of environmental uncertainty on supply chain integration and product quality: an empirical study of Thai automotive industry

Sakun Boon-itt (Thammasat University)

Abstract: Although effective and efficient supply chain management requires integrated business processes that go beyond purchasing and logistics activities, some doubts are expressed concerning the applicability of supply chain integration practices. Specifically, a careful literature search reveals that no studies have included the effect of environmental uncertainty on the relationship between supply chain integration and firm competitive capability, especially product quality. This study therefore represents an attempt to provide the contribution in the field by developing a model to explore the relationships and to fulfill the gap between the literature on supply chain integration and environmental uncertainty. The findings indicate that the effects of supply chain integration on product quality are moderated by environmental uncertainty as demonstrated by Chow tests. The results also provide managerial insights about environmental uncertainty-supply chain integration practices connection.

2. Effects of anti-dumping on China's FDI outflow*

Ai-hu Wang (South China University of Technology); Zhimin Liu (South China University of Technology)

Abstract: Ever since China became a formal member of WTO in 2001, trade relieving cases against Chinese companies have been soaring, among which antidumping is the most prominent one. To overcome antidumping measures of host countries, companies tend to replace traditional trade with investment. Research results indicate that, unlike Japanese companies that applied heavy antidumping circumvention to conquer the antidumping complaints from its major trade partners which were developed countries, Chinese companies have shown no obvious sign of shifting from direct trade to direct investment in order to circumvent antidumping measures from major trade partners. There are two possible explanations of ...

3. Drug Code: Impact on operations and supply chain management in China

Bin Xie (Tsinghua University); Kai Reimers (RWTH Aachen University); Chunyan Lu (Tsinghua University); Mingzhi Li (Tsinghua University)

Abstract: On June 11, 2009, China's State Food and Drug Administration (SFDA) issued the *Notification on the Implementation of the National Drug Code*. This National Drug Code includes a natural code, a

supervision code, and a classification code. However, it only provides a format for natural code. The formats of supervision code and classification code need to be formulated separately in the future. So, currently there is no united national drug code in China. Based on the interviews with managers of pharmaceutical manufacturing, distribution, retail, and logistics companies, as well as people in relevant government departments, the impact of the drug code on safety, operations, and supply chain has been studied. We also discuss the challenges and opportunities of implementing China's united drug code by comparing it with Germany's experience in implementing their national drug code.

4. Managing virtual collaboration amongst nomadic innovation teams*

Chester K.-m. To (The Hong Kong Polytechnic University)

Abstract: In this research, we draw on current theoretic development of project workflow modeling and virtual collaboration work environment, in an attempt to address the team interaction issues in globalizing manufacturing. We put forth an analytic methodology that tracks and measures team interactions. The methodology further analyzes the collaboration contexts amongst activity tasks, and eventually builds congruent collaboration infrastructures. Succinctly, the methodology discerns and assesses the patterns of team interactions using information-based structural models. Interacting teams' behaviour and collaboration are further measured and analyzed. Eventually, the methodology suggests a virtual collaboration infrastructure using eight collaboration context requirements. The collaboration infrastructure will come up with context-specific virtual communication and coordination tools.

5. The impact of knowledge management on alliance performance in supply chain

Jie Yang (University of Houston-Victoria)

Abstract: This paper assesses knowledge management in supply chain alliances and its effect on alliance performance in supply chain in the context of manufacturing firms drawing on the resource-based view and social contagion theory. The results from moderated regression analysis show that (1) knowledge acquisition and dissemination exert significant effects on the performance of supply chain alliances; (2) supply chain integration and relationship stability significantly moderate the link between knowledge management and alliance performance; (3) supply chain integration has no direct effect on alliance performance. These results offer implications for researchers examining the performance of supply chain alliances.

* Full paper available in Conference Proceedings

SESSION A4

10:50 am – 12:20 pm; Room M108

Inventory Management

Session Chair: Liuxin Chen (Hohai University)

1. Spare parts management with dual supply sources and two demand classes

Yi Wang (Xi'an Jiao Tong University); Sean X. Zhou (The Chinese University of Hong Kong); Sheng Hao Zhang (Xi'an Jiao Tong University)

Abstract: Motivated by a spare parts management project at a petrochemical plant of China, we consider a periodic-review, infinite-horizon, inventory system with two service-differentiated demand classes and dual supply sources, which offer different delivery lead time and procurement cost combination. We adopt a base-stock type policy with two constant parameters to control inventory replenishment, and *non-anticipated rationing policy* or *anticipated rationing policy* to allocate on-hand inventory to two demand classes. We provide exact evaluation procedure of system costs and develop an algorithm to find optimal solutions. Numerical studies with data from the project illustrate the superior of anticipated rationing policy.

2. Newsvendor model with consumed stock holding cost

Shao-long Tang (Beijing Normal University-Hong Kong Baptist University United International College); Hong Yan (The Hong Kong Polytechnic University)

Abstract: The Newsvendor problem is one of the fundamental models for stochastic inventory management. In a typical single period newsvendor model, it is assumed that the decision variable has no impact on the holding cost for consumed stock during this period. This paper examines the impact of the consumed stock holding cost and conditions under which this portion of cost is not negligible. Numerical experiments show that the unit inventory holding cost and standard deviation of the demand distribution have the significant influence on whether the consumed inventory holding cost should be considered in the cost function.

3. Loss aversion in the newsvendor problem: reference-dependent analysis

Ying Wei (Université catholique de Louvain)

Abstract: This paper incorporates reference profit effect into the newsvendor problem. By comparing the actual profit with the reference profit level, the firm either perceives a gain or a loss. We examine the effects of reference profit based on the loss-aversion model. Analytical results indicate that reference profit does have significant effects on the behavior of the decision maker. We also investigate the comparative analysis of the optimal order decision with respect to model parameters.

4. Optimal policies for deteriorating inventory problems with multi-class demand fulfillment

Changzheng Zheng (Huazhong University of Science

and Technology); Qing Ding (Singapore Management University); Zhixue Liu (Huazhong University of Science and Technology)

Abstract: We consider an inventory decay problem with multiple customer classes in a stochastic demand environment where the product has a stochastic lifetime and backorder is allowed. Through dynamic programming, we derive the optimal class-based policy with inventory rationing and customer re-serving to maximize the firm's expected profit. Compared to allocating inventory first-come-first-served and rationing inventory without re-servicing the waiting demand, we show that both the profit and fill rate can be improved significantly. Heuristics for real-time implementation are given. In addition, we extend the problem to the case of non-zero lead time and demonstrate the applicability of its results.

5. Capacity allocation strategy for a manufacturing system

Liuxin Chen (Hohai University); Youyi Feng (City University of Hong Kong); Gang Hao (City University of Hong Kong)

Abstract: We investigate a situation in which a manufacturer produces a product with controllable production ability, and sells it through two independent marketing channels, a long-term contractual sales channel and another retail channel. The goal of maximizing the long run average profit not only depends on joint management of the finished goods inventory and demand processes, but more importantly, depends on capacity allocation between the two market channels. In this paper, we show that the optimality is attained by a threshold policy which is a left continuous and increasing function of contractual sales rate, and the optimal average profit is a concave function of contractual sales rate. Furthermore, by evaluating the contract, we provide an optimal supply curve which can be used to negotiate a contract with contractual partner, who may present a demand curve.

SESSION A5

10:50 am – 12:20 pm; Room MN102B

Routing and Delivery Planning

Session Chair: Jiafu Tang (Northeastern University)

1. A shipping route designing and price-setting problem for forwarders*

Ning Wang (Sun Yat-Sen University); Haiqing Song (Sun Yat-Sen University)

Abstract: Forwarders usually design shipping service by renting carriers' service from open market. Therefore, the problem of how to design and price a competitive route is very critical for a forwarder. Unfortunately, this problem is not easy to handle when the uncertainty on the availability of the carriers' service is involved in. In this paper, we model the problem as a dynamic stochastic shortest path problem. By considering different scenarios on getting the real time information about the availability of corresponding carrier's service, we provide three algorithms to calculate how much the freight forwarder should charge for a route and the probability that it will complete the service at this price. Examples are used to illustrate the algorithms.

2. Applying the immune algorithm to solve an urban freight transport problem under traffic control*

Hao-Shan Wang (National Cheng Kung University); Pei-Chun Lin (National Cheng Kung University); Jenhung Wang (National Kaohsiung First University of Science and Technology); Shan-Huen Huang (National Kaohsiung First University of Science and Technology)

Abstract: This study investigates the routing of the distribution system for convenience stores located in high-density areas and require high service levels. During the partitioning phase, this study incorporates the anti-change, experience-oriented mind-set of planners in the industry. It accounts for the potential changing cost by using the memory property of an immune algorithm to construct a partition model that is based on past experience of planners and makes minor modifications to the existing plan rather than completely re-scheduling. During the routing phase, this study formulates the actual road network as an asymmetric, multi-traveling salesman problem by adding urban traffic restrictions, especially turn restrictions that may necessitate a detour. This purpose of this study is to demonstrate a model and with a solution that is designed to improve the efficiency of daily urban logistics and can be readily accepted by planners in the industry.

3. De-cranking heuristics for vehicle routing problems

Hwan-Seong Kim (Korea Maritime University); Hoang-Son Tran-Ngoc (Korea Maritime University)

Abstract: Tackling static and dynamic vehicle routing problems is one of the most important topics in logistics network research, and it can bring substantial benefits to transportation companies. This paper proposes a "de-cranking heuristic," which can generate near-

optimal solutions to dynamic vehicle routing problems with a minimum cost objective. The initial routes are generated using the nearest L-neighbor method. Solomon's samples have been used to test the solution method. The results of our simulation study show that the de-cranking method is efficient and effective in solving static and dynamic vehicle routing problems.

4. A data and scheduling study of the portering system in a hospital

Wai-Ki Ching (The University of Hong Kong); Sydney C.K. Chu (The University of Hong Kong); Li Pan (The University of Hong Kong); Allen H. Tai (The University of Hong Kong)

Abstract: Patients and equipments need to be transported to-and-from hospital buildings by porters efficiently and effectively. This project studies such portering service in a major acute hospital to reduce service delay times for fully achieved performance pledge. For service evaluation, two-weeks' data are captured from the hospital's ADS computerized system centralizing all portering services under consideration. A data-and-time model analyzes the time distribution of a porter spent in a job. Apart from identifying work-time bottlenecks, rescheduling porters can improve the overall system performance. A before-and-after analysis carried out in conjunction with the hospital's operations management shows a substantial improvement readily achievable for low-demand days of operations on Sundays and public holidays.

5. An overview of free pick-up and delivery service of customers to airport in flight ticket sales agents

Jiafu Tang (Northeastern University); Linqing Wang (Northeastern University); Gang Dong (Northeastern University)

Abstract: In this presentation we demonstrate an important decision problem about how to allocate vehicles to pick up which customers in what order and when to be delivered to the airport. And that is with the specific situation of Flight Ticket Sales Agent (FTSA), a typical service company in China, who provides their customers a free pick-up and delivery service (FPDS) to airport to make the competitive advantage. We describe the background and operation procedure of Chinese FPDS. To solve it profitably, we provide some optimization models and devise corresponding algorithms. Some directions are pointed out as a conclusion.

* Full paper available in Conference Proceedings

SESSION A6

10:50 am – 12:20 pm; Room MN102C

Best Student Paper Award

Session Chair: Janny Leung (The Chinese University of Hong Kong)

1. Should purchasing activities be outsourced along with production?*

Fiona X. Yang (The Hong Kong University of Science and Technology); Rachel Q. Zhang (The Hong Kong University of Science and Technology); Kaijie Zhu (The Hong Kong University of Science and Technology)

Abstract: When outsourcing its production to a contract manufacturer, a brand name company may also let the manufacturer take on the procurement of raw materials and components to save overhead costs as well as to focus on its core competencies. However, by outsourcing the purchasing function, the brand name company loses some control over the quality and cost of the materials. We investigate contracting and information sharing in a supply chain consisting of one brand name company and one contract manufacturer, who may source from a pool of suppliers, each associated with a distinct quality level. Material selection decision is made ...

2. In a market with counterfeits: Competition and fighting strategies*

Jie Zhang (The Hong Kong University of Science and Technology); L. Jeff Hong (The Hong Kong University of Science and Technology); Rachel Q. Zhang (The Hong Kong University of Science and Technology)

Abstract: This paper investigates the impact of counterfeits on the price, market share and profitability of brand name products and the strategies for brand name companies to fight counterfeiting. We adopt the vertical differentiation model and allow consumers the choices of purchasing an authentic product, a counterfeit, or not buying. We first study how a non-deceptive counterfeit affects a brand name product in markets with two competing brand name products, and then extend our analysis to different markets with a deceptive counterfeit and devise strategies for brand name companies to protect their products.

* Full paper available in Conference Proceedings

SESSION B1

1:30 pm – 3:00 pm; Room N001

Supply Chain Management II

Session Chair: Tsan-Ming Choi (The Hong Kong Polytechnic University)

1. Implications of a “site-to-store” channel for supply chain performance

Shuya Yin (University of California - Irvine); James Cao (University of California - Irvine); Rick So (University of California - Irvine)

Abstract: As internet retailing has become increasingly prevalent, firms have continued to innovate by adopting multi-channel strategies. One of these innovations is the introduction of a third channel of distribution, commonly known as site-to-store. Customers now have options to purchase online and ship to their home, purchase in-store and pick up in-store, as well as purchase online and pick up in-store. In this project, our focus is on understanding the effect of the site-to-store channel on demand allocation among various distribution channels and the retailer's pricing strategy and profitability.

2. Demand uncertainty and production lead time in a durable goods market

Xiaobo Zheng (University of Rochester); Vera Tilson (University of Rochester)

Abstract: Lead time and the resulting demand uncertainty affect production and pricing decisions of durable goods manufacturers. Manufacturers must make production decisions based on economic forecasts of demand. After the production is complete and economic conditions better understood, the firm can adjust pricing to increase its profits. Durable goods manufacturers face additional complication – the cannibalization of sales via the second-hand market. Using a model of a 2-period game between a durable goods producer and heterogeneous consumers, we investigate how the second-hand market, the separation of production and pricing decision affects the producer profit and consumer welfare.

3. A three-player game in a two-tier supply chain

Yanzhi Li (City University of Hong Kong); Yongquan Lan (City University of Hong Kong)

Abstract: We consider a supply chain consisting of one retailer and two suppliers. The retailer, selling a single product, behaves like a newsvendor. It procures from the two suppliers, which compete with each other on unit cost and salvage value; the supplier who charges a higher unit cost will also offer a higher salvage value. We study the policies for the different parties in the supply chain, when all the firms are maximizing their own profit, the two suppliers coordinate, or all firms coordinate. We characterize the conditions when an inferior supplier could still survive, and show that its existence could benefit the supply chain.

4. The economics of perishable high-salvage product's closed-loop management based on sale rate and reverse process speed

Juan Chen (Shanghai Jiao Tong University); Jianhua Ji (Shanghai Jiao Tong University)

Abstract: This paper researches closed-loop supply chain management of perishable high-salvage products. It models the potential cost-saving of a closed-loop supply chain that collects and remanufactures core components of those products. In single- and dual-origin models, we identify the time value and quantify the relationship of the potential remanufacturing revenues with two main parameters, namely the sale rate of the forward supply chain and the processing speed of the reverse supply chain. The economic impacts of supply chains with different parameters and channels are discussed, and the corresponding management recommendations are provided.

5. Information sharing in a supply chain with forecast updating and returns policy

Tsan-Ming Choi (The Hong Kong Polytechnic University)

Abstract: This paper analytically explores the downward (from supplier to retailer) information sharing issues in a two-echelon supply chain with forecast updating and returns policy. Our analysis has revealed that: 1. Information with low relevance may result in a loss to the retailer. 2. Benefit of forecast updating highly depends on the correlation between the item under forecast and the observation target. 3. The supplier has good incentive to provide relevant and useful information to the retailer under the returns policy. 4. Pareto improvement in the supply chain can be achieved by setting a proper returns policy. Managerial insights are generated.

SESSION B2

1:30 pm – 3:00 pm; Room M106

Contracts and Incentives in Supply Chains I

Session Chair: Suresh Sethi (University of Texas at Dallas)

1. Control rights and options in licensing contracts

Pascale Crama (Singapore Management University)

Abstract: Research and Development cooperation is common in many development-intensive industries. We investigate how to structure the contract to offer the correct incentives to all involved parties when effort is hard to measure. In particular, we show that a contract specifying milestone payments or a royalty rate is unable to coordinate the R&D efforts. We investigate how options and the allocation of control rights can help to achieve higher value. We conduct an extensive numerical analysis to study the impact of the control rights on the project value and optimal contract terms.

2. Revenue sharing contracts in a supply chain under asymmetric information and disruptions*

Pin Zhuang (Nanjing University of Aeronautics and Astronautics; Southeast University); Lindu Zhao (Southeast University)

Abstract: A two-level supply chain model involving one supplier and one retailer is developed. Firstly, revenue sharing contracts under asymmetric retailer's cost information are proposed in a regular scenario. After retailer's cost is disrupted, we obtain the optimal emergency strategies of the supply chain by considering two deviation costs. We illustrate the results by numerical examples.

3. Two-period coordination for a single supplier multiple buyers supply chain with adjustment contract

Rong Li (Singapore Management University)

Abstract: We study the optimal inventory allocation policy for the supply chain with a single supplier and two buyers in a two-period stochastic model. Using this as a benchmark, we study a coordination problem for the supply chain where the supplier offers each buyer a standard replenish opportunity at the start of each period (i.e., the wholesale price contract) and a two-way adjustment opportunity in each period (i.e., the adjustment contract). Note that the coordinating contracts facilitate optimal inventory sharing among the buyers which, to the best of our knowledge, is impossible with all the existing supply contracts.

4. Selling to competing newsvendors with non-discriminating contracts

Rick Li (The Hong Kong University of Science and Technology); Qian Liu (The Hong Kong University of Science and Technology); Stephen Shum (The Hong Kong University of Science and Technology)

Abstract: In certain industries, it is a common practice

for a supplier to offer the same contract to different buyers. In the United States, the Robinson-Patman Act forbids selling to different retailers at discriminating prices. We study a supplier's contracting problem under non-discriminating practice. In particular, we consider a monopolistic supplier selling to two retailers with demand spill-over effects. We show that a retailer's ordering quantity may be increasing in the wholesale price. We also characterize the supplier's optimal strategy under wholesale price contract, return contract and rebate contract.

5. Manufacturer's promotional support in a dynamic retail duopoly

Xiuli He (University of North Carolina, Charlotte); Anand Krishnamoorthy (University of Central Florida); Ashutosh Prasad (The University of Texas at Dallas); Suresh P. Sethi (The University of Texas at Dallas)

Abstract: For the first time, a nearly explicit feedback Stackelberg equilibrium is obtained in a dynamic distribution channel consisting of a manufacturer and two competing retailers engaged in promoting the manufacturer's product to be sold through one or both of the two retailers. The manufacturer decides on its support for the retailers' advertising activities by announcing cooperative advertising subsidies called "participation rates." The retailers compete for market share by selecting advertising efforts. We formulate the problem as a Stackelberg differential game and reduce it to merely solving a set of algebraic equations. We find that the manufacturer should offer the cooperative advertising policy to only one retailer and even then, only when a "participation threshold" depending on the model parameters is exceeded. We identify the levers that determine the optimal participation rate. Furthermore, we obtain important insights into how sensitive the optimal solution is with respect to the parameters. Moreover, we show that retail-level competition induces the manufacturer to offer a higher level of subsidy to the supported retailer and over a wider range of parameters when compared to the results obtained in a one-manufacturer, one-retailer setting.

* Full paper available in Conference Proceedings

SESSION B3

1:30 pm – 3:00 pm; Room M107

Empirical Studies in Operations Management II

Session Chair: Hongyi Sun (City University of Hong Kong)

1. The impact of e-service quality on customer satisfaction and plant-level performance in manufacturing industries

Ting Kong (Xi'an Jiaotong University); Linyan Sun (Xi'an Jiaotong University); Gang Li (Xi'an Jiaotong University)

Abstract: The integration of manufacturing with service has received increasing attention from scholars and practitioners. However, few have examined the critical role of service in manufacturing. This study focused on the e-service and proposed a model investigate the relationship among e-service quality, product quality, customer satisfaction, and plant-level performance. We empirically tested the model using data collected from manufacturing firms in mainland of China. The results indicated that e-service quality is significantly related to product quality and customer satisfaction, while the later in turn influences plant-level performance. Moreover, e-service quality had a greater impact on customer satisfaction than product quality.

2. A study of customer satisfaction in selected food retail outlets

B. Krishna Reddy (Osmania University); V.V.N. Laxmi (S.N Vanita Maha Vidyalaya)

Abstract: Retailing is responsible for matching the demands of the consumers with suppliers of all manufacturers. Retail industry has brought phenomenal changes in the process of production, distribution and consumption of goods allover the world. Retailers recognize that customer satisfaction plays a key role in a successful business strategy. Retailer enhances the value of the product/service to customer through merchandise and value added services. The better the service the more satisfied is the customer. The study will try to identify the critical success factors for enhancing customer satisfaction. Three outlets, namely, RelianceFresh, Fresh @, and Subhiksha are selected for the study.

3. What determines knowledge sourcing from host locations of overseas R&D operations: A study of global R&D activities of Japanese multinationals

Jaeyong Song (Seoul National University); Kazuhiro Asakawa (Keio University); Youngeun Chu (University of Minnesota)

Abstract: What determines knowledge sourcing from host locations of overseas R&D operations? We investigate factors that influence the extent to which overseas R&D laboratories source knowledge from host locations. Drawing on both the capabilities perspective and the embeddedness perspective, we have developed a

conceptual model and then examined it empirically focusing on overseas R&D labs of Japanese multinationals. Statistical findings from negative binomial regressions show that both technological capabilities of the lab and external embeddedness in the local scientific and engineering communities matter.

4. An approach to optimize manufacturing productivity: a pilot study on intensive industries

M. Shahidul Islam (Universiti Malaysia Sarawak)

Abstract: A pilot study on labor intensive industries was conducted to measure the impact of intangible inputs on manufacturing productivity. Most important and potential three inputs such as skills of labor, R&D capability on manufacturing process and working environment were chosen to measure the impact. Study showed that a strong correlation ($r > 0.7$) exists between R&D based inputs and manufacturing productivity. A positive but moderate correlation ($r > 0.5$) exists between the inputs of higher degree of skills of labor and manufacturing productivity. A positive but weak correlation ($r < 0.5$) exists between upgraded working environment and manufacturing productivity. Additionally, the productivity gain ratio was found significantly good ($r_p > 1.4$) for R&D base inputs. The study concludes that R&D knowledge is one of the essentially important inputs for increasing manufacturing productivity in order to remain competitive in market.

5. The empirical relationship between supply chain integration and quality*

Hongyi Sun (City University of Hong Kong); Wenbin Ni (Zhejiang University of Finance & Economics)

Abstract: This research aims to study the impact of supply chain integration on quality. The research is based on the data from over 660 companies in 20 countries. Structural Equation Modeling is used for data analysis. The research reveals that both upstream and downstream integrations significantly influence quality management, while slightly direct impact on quality performance. Internal quality management is the main factor enhancing quality performance. The result suggests that both upstream and downstream integration should be included in the quality management process of the company, which echoes the supplier involvement and customer-focused philosophy in Total Quality Management.

* Full paper available in Conference Proceedings

SESSION B4

1:30 pm – 3:00 pm; Room M108

Pricing and Inventory Planning

Session Chair: Ye Lu (City University of Hong Kong)

1. Dynamic pricing policy in the decentralized channel under reference price effect*

Ke Xu (City University of Hong Kong; University of Science and Technology of China); Liang Liang (University of Science and Technology of China)

Abstract: Reference price effect describes how past price affects current demand of the frequently purchased product. Applying an open-loop Stackelberg differential game, we derive the dynamic pricing policy under reference price effect in a decentralized channel. The result shows that the retailer price monotonically decreases firstly (initial stage), then approaches to the steady-state price (steady stage). Comparing with the integrated channel, we highlight that price penetration is more preferable than price skimming regarding to a certain group of customers. Another finding is, if the manufacturer ignores this effect, the retailer price should be much closer to the steady-state price over the planning horizon.

2. Coordinating markdown pricing of seasonal products in retail chains

Vincent C. Li (National Dong Hwa University); Yat-wah Wan (National Dong Hwa University)

Abstract: Pricing is one of the main levers for revenue management in retailing. This paper studies the markdown pricing strategy when a retailer chain sells the seasonal products with finite planning horizon. The retailers face an uncertain and price-sensitive demand. A permanent markdown pricing method is considered. This paper considers a distribution center which provides stores with replenishment. We formulate a stochastic dynamic programming problem to maximize the total expected profit and develop a heuristic to approximate the optimal pricing strategy.

3. Retailing customized products: Pricing, inventory and refund policies

Alex Grasas (Universitat Pompeu Fabra); Elif Akcali (University of Florida); Aydin Alptekinoglu (SMU Cox School of Business)

Abstract: We study optimal pricing, inventory, and refund policies of a customizing firm. We find that partial refunds are generally optimal. In a single-period setting, partial refunds allow the firm to charge a higher price than the price with no returns allowed. In a multiple-period setting, the firm passes some of the expected savings from being able to carry inventory from one period to another onto the customers, surprisingly, not in the form of higher refunds but of lower prices.

4. A price-dependent demand substitution rule and its applications

Ye Lu (City University of Hong Kong)

Abstract: In a multi-product market, if one product stocks out, consumers may substitute to competing products. In this research, we apply an axiomatic approach to characterize a price-dependent demand substitution rule, and provide a sufficient and necessary condition for demand models where our demand substitution rule applies. Our results can serve as a link between the pricing and inventory literature, and enable the study of joint pricing and inventory coordination as well as retail competition.

* Full paper available in Conference Proceedings

SESSION B5

1:30 pm – 3:00 pm; Room MN102B

Service Operations

Session Chair: Yi Chao Huang (National Pingtung University of Science and Technology)

1. Organic structures in call centres: implications for affective commitment in manufacturing enterprises*

Ayham Jaaron (Loughborough University);

Chris Backhouse (Loughborough University)

Abstract: The purpose of this paper is to explain the leveraging of “Affective Commitment” among call centre front-line employees through the use of “organic structures” for service operations design in a manufacturing enterprise. A case study was carried out using face-to-face interviews, structured questionnaires and direct observation methods to collect data from directors, middle-managers and employees at operative front-line levels. The case study finds a strong relationship between the level of “Affective Commitment” among front-line employees in the call centre and the form of service operations system. It was found that the call centre service operations employs a wide range of “organic structures” characteristics. The study has many implications for the manufacturing enterprises embracing a call centre to improve working experience, productivity and service quality. A higher level of “Affective Commitment” is likely to mitigate the problem of turnover and absenteeism in these service departments.

2. An exploration on the impact of internal service quality on customer contact employee’s commitment to customer service

Jihyun Paik (Yonsei University); Sunmee Choi (Yonsei University)

Abstract: This study intends to improve the existing explanation on what drives customer contact employee (CCE)’s commitment to customer service (CCS) by exploring the impact of internal service quality (ISQ) perceptions on CCS. Specifically, this study intends to (1) identify dimensions of ISQ, (2) identify relative importance of these dimensions on CCE’s CCS, (3) assess the impact of ISQ relative to previously proven impact of training, empowerment and rewards, and (4) finally demonstrate the moderating effect of industry tenure on ISQ’s impact on CCS. Findings of this research will advance studies in the area of service employee’s performance improvement and also help practitioners to better manage work environment to derive CCS from CCEs.

3. The construction of disease forecast system of hospital staff

Yi Chao Huang (National Pingtung University of Science and Technology)

Abstract: This paper presents the process to construct the forecast system of hospital staff with genetic

algorithm and back-propagation network. This study conducted a questionnaire survey to collect hospital staff’s lifestyles, as condition attributes, and integrated their health examination records, as decision attributes. According to the health examination records, genetic algorithms are applied to find out the morbid lifestyle. Based on the foregoing results, the disease forecast system, set up by back-propagation network, displays the disease proportion distribution with Bezier Surface. The forecast system may facilitate the disease prediction and improve the quality of lifestyle of hospital staff.

* Full paper available in Conference Proceedings

SESSION B6

1:30 pm – 3:00 pm; Room MN102C

Environmental Issues and Green Supply Chains

Session Chair: Kee-hung Lai (The Hong Kong Polytechnic University)

attempts to identify the components of GLM, relate GLM to environmental performance and operational performance, and determine the institutional and operational antecedents of adopting GLM in their logistics chain.

1. Research on recycling and reuse strategy optimization in iron & steel industry

Jiafu Tang (Northeastern University)

Abstract: This presentation will give an overview of the findings from a project supported by NSFC. This project try to apply operational research to provide some theoretical and methodological support to reuse and recycling waste in practical logistic operations in mainland China iron and steel industry. The outline of the presentation includes the motivation, background and objective of the project, the reverse logistics system structure for iron & steel industry, recovery strategies optimization problem for a typical class of industrial waste recycling process, location and allocation for scrap steel recycling network design, and inventory replenishment optimization under manufacturing and remanufacturing system environment.

2. Developing green production chains for China's textile industry

Qingliang Gu (Donghua University); Yunfeng Zhang (Donghua University)

Abstract: In order to find a way to promote Cleaner Production (CP) in China's textile industry effectively, this article first analyzes the progress and limitations of the textile Green Supply Chain (GSC), and then shows the results of a survey of textile enterprises in Ningbo city of Zhejiang province. By analyzing the dilemma of the Ningbo textile industry, we found that the implementation of CP requires the participation of stakeholders and a mechanism of practicing CP in the textile value chain. Thus, we put forward a "Green Production Chain" system, which is more reasonable in promoting the implementation of CP, and we discuss the development and management of such a system.

3. Ecological modernization and green logistics management among Chinese manufacturing exporters

Kee-hung Lai (The Hong Kong Polytechnic University)

Abstract: The value chain of many business enterprises is increasingly required to demonstrate the profitability of their primary activities, starting from inbound logistics to operations, outbound logistics, marketing sales, and finally to services. To strive for higher profit gains, Chinese manufacturing exporters have begun to recognize the value of greening these activities. The adoption of green logistics management (GLM) presents an opportunity for them to respond the escalating expectation of the international community for resources conservation and to achieve environmental performance profitably. Grounded in the ecological modernization perspective with institutional explanation, this study

SESSION C1

3:30 pm – 5:00 pm; Room N001

Production Planning and Control

Session Chair: Yavuz Gunalay (Bahcesehir University)

1. Managing interruption: A perspective of virtual team collaboration in production planning and control*

Siyang Fang (The Hong Kong Polytechnic University); K.M. Chester To (The Hong Kong Polytechnic University); Zhiming Zhang (The Hong Kong Polytechnic University); Jimmy M.T. Chang (The Hong Kong Polytechnic University)

Abstract: How to deal with interruption properly to ensure smooth communication and team collaboration becomes one of the most vexing problems in today's dispersed production planning and control. However, little work has been done to draw a systematic sketch of research issues and findings. This paper reviews cross-disciplinary literature, pointing out that intensive interaction is mostly beneficial in production control and collaboration. More, the paper reviews the causes and effects of interruption on interacting team, and proposes a schematic analysis of interruption impacts. On such premises, the authors put forth interruption treatment strategies for coordinating today's globalizing production planning and control activities. However, there still awaits mature and systematic solutions to boost collaboration efficiency, it is also the interest of our future research.

2. A new look at waste and value-added work in the Toyota Production System*

Yick-Hin Hung (The Hong Kong Polytechnic University); Leon Y.O. Li (The Hong Kong Polytechnic University); T.C.E. Cheng (The Hong Kong Polytechnic University)

Abstract: This paper argues that the concept of waste existing in a process is a blind spot in the Toyota Production System. In this study we find that a process contains only value-added and non-value-added work, but not waste. Value-added work can be either positive or negative. Negative value-added work is work that decreases the accumulated value of the process. Non-value-added work is necessary because it holds one or more constraints. Waste will only be revealed after the constraints on a process have been eliminated and some changes have been made. The blind spot is caused by assuming that if constraints are removed, then waste is visualized.

3. Coordination of price and lead time quotation with production scheduling decisions in a supply chain

Xianfei Jin (Nanyang Technological University); Kunpeng Li (Singapore MIT alliance; Huazhong University of Science and Technology); A.I. Sivakumar (Nanyang Technological University)

Abstract: In this paper, we study a supply chain consists of a firm and a set of customers. The firm quotes a uniform price and lead time for the product. The demand from each customer depends on the quoted price and lead time. The firm's objective is to maximize the profit by quoting the best price and lead time, while a given service level should be satisfied. In this context, traditional approach treated the production process as a queuing system for the purpose of easy modeling. However, this approach is only an approximation one, which can not guarantee the best performance of the production stage. In this research, we investigate the detailed scheduling issue other than treating the production as an M/M/1 queue. The mathematical model is developed. Also, the optimal price and time quotation, as well as the production scheduling algorithm, are identified.

4. A queueing model analysis of a hybrid manufacturing/remanufacturing system*

Yavuz Gunalay (Bahcesehir University)

Abstract: Refurbished item sale is becoming a common practice especially in electronics industry. This new source of revenue brings new problems as well, such as marketing, pricing and production planning for this new line of product. In this study, a firm that sells goods both in the new item and refurbished item markets is considered. The production and inventory system of the firm is modeled. We consider both no product substitution and partial product substitution cases. A queueing network is used to model the system and an algorithm to calculate the best base-stock inventory levels for both item types is presented. The results are used to discuss the implication of different production and quality strategies.

* Full paper available in Conference Proceedings

SESSION C2

3:30 pm – 5:00 pm; Room M106

Contracts and Incentives in Supply Chains II

Session Chair: Biying Shou (City University of Hong Kong)

1. Information acquisition and contracting in a supply chain

Tian Li (The Hong Kong University of Science and Technology); Shilu Tong (The University of New South Wales); Hongtao Zhang (The Hong Kong University of Science and Technology)

Abstract: We consider a supply chain where the downstream retailer's information acquisition has uncertain outcome. The retailer chooses his acquisition capability, which determines his probability of being informed of the realization of the uncertain demand. The upstream manufacturer offers a contract menu to the retailer. We characterize the optimal contract menu and analyze the effects of information acquisition on firms' profits. Under a mild condition, the retailer's optimal acquisition capability uniquely exists. The unobservability of information acquisition can either benefit or hurt the retailer. Our results underline the impacts of acquisition uncertainty and observability on contract designs under asymmetric information.

2. Streamlining inventory flows with time discounts to improve the profits of a decentralized supply chain

Qinan Wang (Nanyang Technological University); Yiowmin Chay (Nanyang Technological University); Zhang Wu (Nanyang Technological University)

Abstract: We consider a decentralized supply chain, whereby a supplier sells a product to a group of independent buyers, and develop a strategy for the supplier to offer an all-unit price discount or cash rebate for orders that are synchronized with its replenishments. As synchronized orders can be met with inventory directly from receiving to shipping without warehousing, the proposed strategy streamlines system inventory flows to minimize inventory and, hence, the related costs. On the other hand, by increasing the replenishment interval of the supplier, the proposed strategy is able to induce buyers to order in large quantities and hence achieve the objectives of quantity discounts. We show that the proposed strategy can achieve nearly optimal (minimum) system cost, and is much more effective than the existing coordination strategies for decentralized supply chains in the literature.

3. Using subsidiary schemes in supply chain with multiple-class demand and partial backlogging

Xiaojing Wang (Huazhong University of Science and Technology); Qing Ding (Singapore Management University); Zhixue Liu (Huazhong University of Science and Technology)

Abstract: This paper introduces two subsidy schemes in

a supply chain consisting of a manufacturer and a retailer, who then fulfills multiple-class customers' demand. In order to reduce the per-unit setup cost, the manufacturer provides the holding cost subsidy and discounting cost subsidy schemes to induce the retailer to increase the cycle time. We derive the retailer's optimal solution and the unique cycle time. The numerical analysis shows that both manufacturer and retailer may benefit significantly from adopting the subsidy schemes, and sometimes the two schemes can be useful complements. Lastly, we provide some guidelines and insights on how to choose the effective subsidy schemes.

4. Two-wholesale-price contract in a three-tier supply chain

Pengfei Guo (The Hong Kong Polytechnic University); Yulan Wang (The Hong Kong Polytechnic University); Baozhuang Niu (The Hong Kong Polytechnic University)

Abstract: Employing a three-tier supply chain consisting of an original equipment manufacturer (OEM), a contract manufacturer and a supplier, we investigate how the OEM can use two-wholesale-price contracts to motivate the upstream parties to establish a larger production quantity/capacity. Two vertical outsourcing structures are considered: Delegation and control. We characterize the equilibrium prebook strategies under different scenarios and show that there exist opportunities for Pareto improvements. We then compare the supply chain parties' equilibrium profits under the two outsourcing structures. Lastly, we extend our discussion into cases where supply chain parties may have different risk attitudes and asymmetric demand information.

5. Managing supply uncertainty under chain-to-chain competition

Biying Shou (City University of Hong Kong)

Abstract: We study the competition of two supply chains with supply uncertainty. We examine the supply chain decisions at three different levels. At the operational level, we show that retailer should order more (less) if its competing retailer has a less (more) reliable supply. At the design level, we consider two types of contracts and characterize the optimal terms. At the strategic level, we show that supply chain coordination is a dominant strategy. Nevertheless, if supply risk is low, coordination could decrease supply chain profit, which results in a prisoner's dilemma; if supply risk is high, coordination increases supply chain profit.

SESSION C3

3:30 pm – 5:00 pm; Room M107

Information Technology and Technology Management

Session Chair: Jenny Y. Xin (The Hong Kong Polytechnic University)

1. A status survey on the use of information and communication technologies in the third-party logistics industry of Australia*

Kwok Hung Lau (RMIT University)

Abstract: Electronic data interchange (EDI), Web-based EDI (WEDI), and Extensible Markup Language (XML) protocol are among the most popular information and communication technologies (ICTs) adopted in business-to-business (B2B) e-business. As third-party logistics (3PL) providers are often required to coordinate logistics activities of the entire supply chain for their customers, the use of these ICTs by the 3PL industry needs to be explored. Through a questionnaire survey, this study investigates the current status of usage of EDI, WEDI and XML in the 3PL industry taking Australia as an example. The findings reveal that WEDI is more popular than traditional EDI and XML...

2. Evaluation of ERP implementation on firm performance: A case study of AT&T*

Xin Chan (The Hong Kong Polytechnic University);

Yui-yip Lau (The Hong Kong Polytechnic University)

Abstract: Recently, firms face the twofold challenges from the sharp deterioration of global economy and the continual risen in customer demand and expectations. The invention of ERP brings the firms with operating cost minimization and customer service level maximization in a changing economy. This study uses AT&T, the largest telecom service provider in the United States, as an organization for our study. We investigate the critical elements of their ERP implementation process. This study also illustrates comprehensive approaches of valuing and evaluating ERPs from the pre-implementation to post-implementation performance including cost-benefit analysis, multiple linear regression and intensity index method.

3. Exploring the relationships between commitment and job satisfaction for information technology developers in private-owned and state-owned enterprises in China*

Dongyu Chen (Southwest University of Finance and Economics);

Gezhi Chen (Southwest University of Finance and Economics);

Na Zhang (Southwest University of Finance and Economics)

Abstract: This study reveals that: (1) the relationship between normative commitment and satisfaction was significant for information technology developers in both state-owned and private-owned enterprises, but the relationship is significantly greater in private-owned

companies; (2) the relationship between ideal commitment and satisfaction was significant in state-owned companies but insignificant in private-owned companies, and the relationship is greater in state-owned companies than in private-owned companies; (3) the relationship between economic commitment and satisfaction was significant in private-owned companies but insignificant for state-owned ones, and there were no significant differences between these two associations; (4) there are no significant associations between opportunity commitment ...

4. Technology planning and resource optimization

Ziqi Liao (Hong Kong Baptist University)

Abstract: This paper explores the challenges to technological innovation and an analytical framework for technology planning and resource allocation. Despite the optimization paradigm has achieved dominance in R&D project evaluation over the last few decades, the application of optimization methods involves considerable difficulties in practice. Technology planning is a sophisticated process influenced by numerous environmental and organizational factors. Strategic consistency emerges as an essential requirement. Therefore, this paper presents the design of a model framework to evaluate and optimize the allocation of resources to different innovation activities. The present model can be customized to achieve strategic integration and consistency.

5. The operating impacts of technologically innovative products: some preliminary results

Jenny Y. Xin (The Hong Kong Polytechnic University);

Andy C.L. Yeung (The Hong Kong Polytechnic University);

T.C.E. Cheng (The Hong Kong Polytechnic University)

Abstract: Do technologically innovative products lead to higher operating performance? Based on an event study of technologically innovative products introduction announcements in the USA over 15 years and objective financial data collected from COMPUSTAT, we investigated the financial impact of technologically innovative products on firm performance. Our preliminary results show that technologically innovative products as a whole have a very limited or insignificant impact on firm performance. Our further analysis suggests that industrial context is an important factor. Technologically innovative products lead to higher operating performance in medical and pharmaceutical related industries (mainly SIC 28 and SIC 38), but have negative or insignificant effects in general Electronics and Computers industries (mainly SIC 35 and SIC 36).

* Full paper available in Conference Proceedings

SESSION C4

3:30 pm – 5:00 pm; Room M108

Product Design and Quality

Session Chair: Bibo Yang (The Hong Kong Polytechnic University)

1. Design outsourcing in a differentiated product market: The role of bargaining and scope economies

Qi Feng (University of Texas at Austin); Lauren Xiaoyuan Lu (University of North Carolina at Chapel Hill)

Abstract: During the last two decades, original equipment manufacturers (OEMs) gradually extended their outsourcing activities beyond manufacturing and outsourced product design and development to original design manufactures (ODMs). This new outsourcing model shifts the control of product design from an OEM to an ODM. We develop a dynamic game to study how design outsourcing may impact product differentiation and downstream competition among OEMs.

2. Quality, costs and social responsibly—from the inside

James O'Hara (International Business School)

Abstract: It is considered global enterprises are focussed on quality, however evidence from managing, and working with entrepreneurial organisations in Asia, with assets from 40,000US\$ up to 1 billion US\$, indicates that the focus is on lowering costs and increasing profit. Many buying organisations want higher quality but at the same time drive down prices squeezing margins and adversely affecting workers' conditions and pay. Even where there is a genuine concern to improve quality and conditions many owners and senior managers do not have sufficient operations experience and training to understand or believe that "Quality can really cost less in the long run".

3. Commonality in product line design under negatively correlated preference structure: Intensifying and relieving cannibalization

Kilsun Kim (Sogang University); Dilip Chhajed (University of Illinois at Urbana Champaign)

Abstract: Existing literature on commonality strategy identify a key trade-off between cost saving and product differentiation and show that commonality strategy always intensifies the cannibalization problem in a product line. We show that this result holds only when consumer segments are positively correlated in preference structure, where one segment's part worth is greater than the other segment's for all attributes. When the segments are negatively correlated in preference structure, the effect of commonality strategy is more diverse so that it can intensify or relieve the cannibalization problem. The relieved cannibalization takes place if high level of common attribute enabled by cost saving makes the product less appealing to other would-be consumers in terms of price and utility.

4. Design reuse in care apparel development*

Bibo Yang (The Hong Kong Polytechnic University); Frency S.F. Ng (The Hong Kong Polytechnic University)

Abstract: Care apparel is a highly customized product and so special, creative technical solutions are required in care apparel design. In this research, we investigate the current design process at a care apparel design centre. The process time is long due to the difficulty in finding proper technical solutions. Consequently, we propose a design reuse system where existing products and technical solutions are stored and reused. In the system, a product family system is constructed to store existing products for different patients' syndromes. A product information mode is defined to contain both functional requirements and technical solutions of products.

* Full paper available in Conference Proceedings

SESSION C5

3:30 pm – 5:00 pm; Room MN102B

Logistics and Port Services

Session Chair: Eric W.T. Ngai (The Hong Kong Polytechnic University)

1. A study of countries' logistics performance and export

Danny C.K. Ho (The Hong Kong Polytechnic University); Eve M.H. Chan (The Hong Kong Polytechnic University); Tsz Leung Yip (The Hong Kong Polytechnic University)

Abstract: Logistics performance has become an important source of competitive advantage in global trade, but there is lack of empirical study on its impact on trade performance. The current study seeks to address this gap by examining the impact of logistics performance of countries on their performance in apparel exports. It is found that the efficiency of the clearance process by custom and ability to track and trace international shipments are the top most significant factors among the seven logistics indicators of LPI. The gravity trade model provides evidence that the logistics performance enhances the competitiveness of countries in global trade.

2. Transformation in third party e-fulfilment: An effective benchmarking index*

Paul Alexander (Curtin University)

Abstract: The Logistics industry is undergoing dramatic transformation as retail organisations focus on core competencies, outsource many of their logistics operations and explore online channels. Using a study of third party fulfillment providers in the UK over a 5 year period, this paper reports on quantitative changes in an *index of relative transformation* previously developed and published by the author, which indicates significant transformation from physical to knowledge based activities. These changes will have long-term impacts in the Logistics industry, and the index of relative transformation provides a useful means of modeling the transformation phenomenon and benchmarking logistics businesses' competitiveness in this environment.

3. An efficiency analysis of dry ports in the JNPT region of India: A DEA approach

Girish Gujar (The Hong Kong Polytechnic University); Hong Yan (The Hong Kong Polytechnic University); Arthur Kong (The Hong Kong Polytechnic University)

Abstract: This paper measures the efficiency of dry ports in the JNPT region of India by Data Envelopment Analysis (DEA) approach. These dry ports play an important role in not only the Jawaharlal Nehru port, the biggest container port of India but also in the region's economic development. This paper estimates the relative efficiency of 26 dry ports in the region and considers service quality in terms of SERVQUAL score. The efficiency is also computed by considering the annual throughput alone and subsequently we attempt to

determine which of the efficiency estimation is more relevant to the stakeholder's perspective.

4. An analysis of logistics service center and green lane service for container transportation networks

Eric W.T. Ngai (The Hong Kong Polytechnic University); C.C. Yiu (The Hong Kong Polytechnic University); B.K.S. Cheung (GERAD and Ecole Polytechnique de Montreal); M.C.M. Lee (The Hong Kong Polytechnic University); P.Y.F. Chai (The Hong Kong Polytechnic University); S.Y.S. Choi (The Hong Kong Polytechnic University)

Abstract: To cope with increasing cross-border traffic between Hong Kong and Shenzhen, there has been a proposal of setting up more of logistics service centers to help in efficient distribution of goods and raw materials into different parts of the nearby regions. In this paper, we present an efficient method equipped with an optimization meta-heuristics solution to determine the maximum benefit obtainable by these new set-ups with optimal number of logistics service centers near the Hong Kong – Shenzhen borders and appropriate number of Green Lanes at each of the boundary check-points.

* Full paper available in Conference Proceedings

PANEL DISCUSSION

(5:05 pm – 6:00 pm; N001)

Production and Operations Management in a Changing Economy

Moderator:

Chung-Yee Lee

Chair Professor, Department of Industrial Engineering and Logistics Management, The Hong Kong University of Science and Technology

Panelists:

Hau L. Lee

Thoma Professor of Operations, Information and Technology, Graduate School of Business, Stanford University

Janny M.Y. Leung

President, Production and Operations Management Society—Hong Kong Chapter and Professor, Department of Systems Engineering and Engineering Management, The Chinese University of Hong Kong

Ching-Jong Liao

President, Taiwan Chapter, Production and Operations Management Society and Professor & Vice President, National Taiwan University of Science and Technology

AUTHOR INDEX

Akcali, Elif	B4	Lan, Yongquan	B1	Wang, Hao-shan	A5
Alexander, Paul	C5	Lau, Kwok Hung	C3	Wang, Jenhung	A5
Alptekinoglu, Aydin	B4	Lau, Yui-yip	C3	Wang, Linqing	A5
Asakawa, Kazuhiro	B3	Laxmi, V.V.N.	B3	Wang, Ning	A5
Backhouse, Chris	B5	Lee, Chung-Yee	A2	Wang, Qinan	C2
Boon-itt, Sakun	A3	Lee, M.C.M.	C5	Wang, Xiaojing	C2
Cai, Ning	A2	Leung, Philip	A2	Wang, Yi	A4
Cao, James	B1	Li, Gang	B3	Wang, Yulan	C2
Chai, P.Y.F.	C5	Li, Kunpeng	C1	Wei, Ying	A4
Chakravarty, Amiya K.	A1	Li, Leon Y.O.	C1	Wu, Zhang	C2
Chan, Eve M.H.	C5	Li, Ling X.	A1	Xie, Bin	A3
Chan, Xin	C3	Li, Linhui	A1	Xin, Jenny Y.	C3
Chang, Jimmy M.T.	C1	Li, Mingzhi	A3	Xu, Ke	B4
Chay, Yiowmin	C2	Li, Rick	B2	Xu, Liang	A2
Chen, Dongyu	C3	Li, Rong	B2	Xu, Zhou	A2
Chen, Frank	A2	Li, Sheng	A1	Yan, Hong	A4, C5
Chen, Gezhi	C3	Li, Tian	C2	Yang, Bibo	C4
Chen, Juan	B1	Li, Vincent C.	B4	Yang, Fiona X.	A6
Chen, Liuxin	A4	Li, Yanzhi	B1	Yang, Jie	A3
Cheng, T.C.E.	C1, C3	Liang, Liang	B4	Yeung, Andy C.L.	C3
Cheung, B.K.S.	C5	Liao, Ziqi	C3	Yin, Shuya	B1
Chhajed, Dilip	C4	Lin, Pei-Chun	A5	Yip, Tsz Leung	C5
Ching, Wai-Ki	A5	Liu, Qian	B2	Yiu, C.C.	C5
Choi, S.Y.S.	C5	Liu, Qiang	A1	Zhang, Hanpeng	A1
Choi, Sunmee	B5	Liu, Zhimin	A3	Zhang, Hongtao	C2
Choi, Tsan-Ming	B1	Liu, Zhixue	A4, C2	Zhang, Jie	A6
Chu, Sydney C.K.	A5	Lu, Chunyan	A3	Zhang, Na	C3
Chu, Youngeun	B3	Lu, Lauren Xiaoyuan	C4	Zhang, Rachel Q.	A6
Crama, Pascale	B2	Lu, Ye	B4	Zhang, Sheng Hao	A4
Ding, Qing	A4, C2	Maeng, Jooyol	A1	Zhang, Yunfeng	B6
Dong, Gang	A5	Ng, Frency S.F.	C4	Zhang, Zhiming	C1
Fang, Siyan	C1	Ngai, Eric W.T.	C5	Zhao, Lindu	B2
Feng, Qi	A1, C4	Ni, Wenbin	B3	Zheng, Changzheng	A4
Feng, Youyi	A4	Niu, Baozhuang	C2	Zheng, Xiaobo	B1
Fu, Qi	A2	O'Hara, James	C4	Zhou, Sean X.	A4
Gan, Xianghua	A1	Paik, Jihyun	B5	Zhu, Kaijie	A6
Grasas, Alex	B4	Pan, Li	A5	Zhuang, Pin	B2
Gu, Qingliang	B6	Prasad, Ashutosh	B2		
Gujar, Girish	C5	Reddy, B. Krishna	B3		
Gunalay, Yavuz	C1	Reimers, Kai	A3		
Guo, Jiao	A1	Sethi, Suresh P.	B2		
Guo, Pengfei	C2	Shou, Biying	C2		
Hao, Gang	A4	Shum, Stephen	B2		
He, Xiuli	B2	Sivakumar, A.I.	C1		
Ho, Danny C.K.	C5	So, Rick	B1		
Hong, L. Jeff	A6	Song, Haiqing	A5		
Huang, Shan-Huen	A5	Song, Jaeyong	B3		
Huang, Yi Chao	B5	Su, Qin	A1		
Hung, Yick-Hin	C1	Su, Yiwen	A2		
Islam, M. Shahidul	B3	Sun, Hongyi	B3		
Jaaron, Ayham	B5	Sun, Linyan	B3		
Ji, Jianhua	B1	Tai, Allen H.	A5		
Jin, Xianfei	C1	Tang, Jiafu	A5, B6		
Kim, Hwan-Seong	A5	Tang, Shao-long	A4		
Kim, Kilsun	C4	Teo, Chung Piaw	A2		
Kong, Arthur	C5	Tilson, Vera	B1		
Kong, Ting	B3	To, Chester K.-m.	A3, C1		
Krishnamoorthy, Anand	B2	Tong, Shilu	C2		
Lai, Kee-hung	B6	Tran-Ngoc, Hoang-Son	A5		
		Wan, Yat-wah	B4		
		Wang, Ai-hu	A3		

SESSION CHAIRS

A1 Xianghua Gan
A2 Ning Cai
A3 Jie Yang
A4 Liuxin Chen
A5 Jiafu Tang
A6 Janny Leung

B1 Tsan-Ming Choi
B2 Suresh Sethi
B3 Hongyi Sun
B4 Ye Lu
B5 Yi Chao Huang
B6 Kee-hung Lai

C1 Yavuz Gunalay
C2 Biying Shou
C3 Jenny Y. Xin
C4 Bibo Yang
C5 Eric W.T. Ngai