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Curriculum Vitae of Yang Li

Contact Information

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Education

Rotman School of Management, University of Toronto
Ph.D. Candidate in Operations Management, minor in Economics 2015 (expected)

McMaster University
M.Sc. in Financial Mathematics 2010
M.A.Sc. in Computational Engineering and Science (*recipient of Outstanding Thesis Award*) 2008

Beijing University of Posts and Telecommunications
B.S. in Applied Mathematics (*recipient of University Award for Excellent Final Year Project*) 2006

Research Interests

Service operations, consumer behavior in service systems, procurement flexibility in supply chains, game theoretic operations models, empirical operations management, and optimization.

Referred Journal Articles

1. Non-linear Equity Portfolio Variance Reduction Under a Mean-Variance Framework — a Delta-Gamma Approach, with Sean W. Jewell and Traian A. Pirvu, *Operations Research Letters*, 41-6 (2013), 694-700.
2. A New Class of Large Neighborhood Path-following Interior Point Algorithms for Semidefinite Optimization with $O(\sqrt{n}\log\frac{\mathrm{Tr}(X^0S^0)}{\epsilon})$ Iteration Complexity, with Tamás Terlaky, *SIAM J. on Optimization*, 20-6 (2010), 2853-2875.

Working Papers

1. The Downside of Reorder Flexibility Under Price Competition, with Philipp Afèche and Ming Hu, *invited for third-round review at M&SOM*, 2014.
2. Efficient Ignorance: Information Heterogeneity in a Queue, with Ming Hu and Jianfu Wang, *invited for second-round review at Management Science*, 2014.
3. Optimal Staffing under Endogenous Arrivals of Strategic Customers with Heterogeneous Time-of-Service Preferences, with Philipp Afèche, *in preparation*, 2014 (Job Market Paper).

Current Projects

- When Do Customers Contact Call Centers? An Empirical Study of Customers' Time-of-Service Choices, with Philipp Afèche.
- Why Does Amazon Partner with Camelcamelcamel to Share Price History with Customers?

Teaching Experience

- Teaching Assistant, Rotman School of Management, University of Toronto
  RSM 1340 *Operations Management* (MBA Core), Winter 2014
  RSM 1382 *Statistics for Management* (MBA Core), Fall 2012, Winter 2013
  RSM 470 *Management Science* (Commerce Undergraduate), Fall 2010, Fall 2011
  RSM 370 *Supply Chain Management* (Commerce Undergraduate), Fall 2013
  RSM 270 *Operations Management* (Commerce Undergradaute), Winter 2012, Summer 2013, Summer 2014
- Teaching Assistant, Department of Mathematics & Statistics, McMaster University
  SFWR 2DM3 *Discrete Mathematics* (Undergraduate), Fall 2006, Fall 2007
  MATH 2L03 *Mathematical Methods for Business and Social Sciences* (Undergraduate), Fall 2008
  MATH 2ZZ3 *Engineering Mathematics IV* (Undergraduate), Winter 2010

Awards and Honors

Rotman Doctoral Fellowship, University of Toronto	2010-2015
Ontario Graduate Scholarship	2014-2015
J. Murray Armitage Scholarship	2014
Canadian Credit Management Foundation Fellowship, University of Toronto	2013
School of Graduate Studies Conference Grant, University of Toronto	2012
Honourable Mention of Canadian Operational Research Society Student Paper Competition	2010
Graduate Scholarship and Tuition Bursary, McMaster University	2006-2010
Outstanding Thesis Award, McMaster University	2008
University Excellent Final Year Project, Beijing University Posts and Telecommunications	2006
University Undergraduate Scholarship, Beijing University Posts and Telecommunications	2003-2005

Conference Presentations

Optimal Staffing under Endogenous Arrivals with Heterogeneous Customer Time-of-Service Preferences

- INFORMS Annual Meeting, San Francisco, USA, November 2014.
- MSOM Annual Conference, Seattle, USA, June 2014.

The Downside of Reorder Flexibility Under Price Competition

- MSOM Annual Conference, New York, USA, June 2012.
- CORS Annual Conference, Niagara Falls, Canada, June 2012.
- Trans-Atlantic Doctoral Conference, London, UK, May 2012.
- POMS Annual Conference, Chicago, USA, April 2012.

How Could Interior Point Algorithms Be Better?

- MITACS/CORS 2010 Annual Conference, Edmonton, Canada, May 2010.
- Modeling and Optimization: Theory and Applications Conference, Guelph, Canada, August 2008.

References

Professor Philipp Afèche	Professor Ming Hu	Professor Dmitry Krass
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Abstracts of Working Papers

Optimal Staffing under Endogenous Arrivals of Strategic Customers with Heterogeneous Time-of-Service Preferences (Job Market Paper)

The service operations literature usually treats arrivals as exogenous processes. However, arrival processes may be endogenous in many settings. That is, customers may account for system congestion in choosing their time-of-service (TOS). This paper studies the following four aspects of this interplay between customers' TOS choices and the provider's staffing decisions. First, we propose an equilibrium model that captures how rational customers with heterogeneous TOS preferences and delay costs choose their TOS. Second, we characterize the system-optimal staffing, TOS, and arrival rate decisions. Third, we show that the system-wide optimal solution is incentive-compatible with respect to customers' TOS decisions, and we discuss the role of pricing in achieving the optimal arrival rates. Fourth, we illustrate how system performance may suffer if the service provider ignores or incorrectly factors TOS preferences in staffing decisions.

Efficient Ignorance: Information Heterogeneity in a Queue (Under revision for Management Science)

The literature on queues with strategic customers treats the queue length as either observable or unobservable for all customers. However, many systems serve customers that differ in terms of their delay information: some are informed whereas others are uninformed about the real-time delay. We study the question: How does the fraction of informed customers affect the systems social welfare and throughput? We consider an M/M/1 queueing system with customers that have identical service valuations and delay costs, but that differ in their delay information. First, we characterize the equilibrium joining behavior of uninformed customers. Second, we show that for any system with a sufficiently high implied utilization, the maximum social welfare is achieved when *some but not all* customers are informed. Third, we show that the prevalence of queue information has a more subtle effect on system throughput. Specifically, if the implied utilization is below (above) some threshold, then the throughput is maximized when all (no) customers can observe the queue. For implied utilization between these thresholds, the throughput is maximized when some but not all customers can observe the queue.

The Downside of Reorder Flexibility Under Price Competition (Under revision for M&SOM)

The supply chain literature shows that reorder flexibility increases profits under competition, assuming fixed prices or quantity competition. We show that price competition, which may be a more appropriate price formation model in the presence of reorder flexibility, may yield opposite results. We consider a three-stage model of duopoly firms that sell differentiated products with stochastic demand. Firms make reorder-flexibility decisions and then place initial orders, before observing demand. After observing demand, firms set prices and, if they have the option, may reorder at a higher cost. We show that the expected profit functions are not unimodal and provide extensive equilibrium results. These appear to be the first for stochastic finite-horizon price-inventory competition with more than one order opportunity. We show: (i) Unilateral reorder flexibility is not an equilibrium. (ii) Reorder flexibility may increase initial orders. (iii) Reorder flexibility hurts profits except if it reduces initial orders and in addition, demand variability is moderate, reordering is sufficiently inexpensive, and products are sufficiently differentiated. (iv) Firms can avoid the downside of reorder flexibility only in some cases where it hurts profits. In others, firms are trapped in a prisoner's dilemma, whereby reorder flexibility is the dominant strategy even though it hurts their profits.