

JOSEPH G. SZMEREKOVSKY

Assistant Professor of Management
College of Business Administration
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North Dakota State University
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Joseph.Szmerekovsky@ndsu.edu

EDUCATION

Ph. D. in Operations Research (January 2003)

Department of Operations, Case Western Reserve University-Weatherhead
School of Management, Cleveland, Ohio

Master of Science in Management Science (August 1999)

Department of Operations, Case Western Reserve University-Weatherhead
School of Management, Cleveland, Ohio

Bachelor of Science in Applied Mathematics (May 1998)

Department of Mathematics, Case Western Reserve University, Cleveland, Ohio

RESEARCH

My primary focus of research activity is the Payment Scheduling Problem in project management. To date, the main contribution of my research has been to consider the affect on the client when the contractor behaves in his own best interest rather than cooperating with the client. In contrast to other models, I have found that in the self-interested setting the client should use a large number of payments to attract the contractor to the project while keeping retention high to promote his own interests. This continues in two directions of research. The first is to develop project scheduling algorithms to understand how the contractor behaves to maximize his own net-gain. Given the contractor's behavior, the second is to development managerial rules and guidelines for the client in establishing a payment schedule which entices the contractor to behave in the client's best interest in addition to his own. My current efforts are focused on accounting for multiple modes in processing activities, resource constraints in processing activities and uncertainties in project costs.

I also conduct research related to supply chain management. My work in supply chain management deals with advertising costs and contractual approaches for the manufacturer to subsidize retailer advertising. Interestingly, to date we have observed that varying the whole sale price is more effective for the manufacturer than subsidizing advertising and the optimal solution, when the manufacturer is the leader in a Stackelberg game, results in no shared advertising cost. My research also considers how implementing RFID and related technologies impacts supply chain dynamics. The first topic to be addressed is the impact of contractual agreements in vendor managed inventory systems. In most reports on RFID technology the majority of the benefits are observed at the retail stage and the majority of the costs are observed at the manufacturing stage. However, under

vendor managed inventory, the retailer does not better manage his inventory but, rather, better manages the manufacturer's inventory. This should completely change the dynamic of what is commonly being reported.

In addition, I am working on merging my research in complex systems with my work in project management. My work on complex systems has considered functional specialization and leadership. For example, we were able to identify systems where the appropriate level of control included a significant amount of deviant behavior from the agents. This occurred not only because of the costs associated with increased control but also because of the agents providing a different perspective on system needs than the leader or controller held. I plan on taking an agent based view of project management where the agents who perform the work act according to individual behavior patterns as opposed to the dictates of a single project manager. This approach should be useful in considering how projects develop internally as well as externally, where outsiders are contracted to perform the work.

Publications

Szmerekovsky, J. G. and J. Zhang, "Pricing and Two-Tier Advertising with One Manufacturer and One Retailer", *European Journal of Operational Research*, to appear.

Szmerekovsky, J. G. and J. Zhang, "Item-level RFID in the Retail Supply Chain with Vendor Managed Inventory", *International Journal of Production Economics*, to appear.

Szmerekovsky, J. G., J. Zhang, and V. Tilson, "Pricing and Allocation of Retail Space with One RFID-enabled Supplier and One Non-RFID Enabled Supplier", *International Journal of Revenue Management*, to appear.

Solow, Daniel and Joseph G. Szmerekovsky, "Factors that Affect the Optimal Amount of Central Control in Complex Systems", *Naval Research Logistics*, to appear.

Enyinda, Chris and Joseph G. Szmerekovsky, "Leveraging Lean Supply Chain for Value Chain Management: A comparative assessment of military and commercial organizations", *Journal of Business and Behavioral Sciences*, to appear.

Szmerekovsky, J. G., "Single Machine Scheduling under Market Uncertainty", *European Journal of Operational Research* 177(1) (2007) 163-175.

Szmerekovsky, J. G. and G. Vairaktarakis, "Maximizing Project Cash Availability", *Naval Research Logistics* 53(4) (2006) 72-284.

Solow, D. and J. G. Szmerekovsky, "The Role of Leadership: What management science can give back to the study of complex systems", *Emergence: Complexity and Organization* 8(4) (2006) 52-60.

Szmerekovsky, Joseph G., “The Impact of Contractor Behavior on the Client’s Payment Scheduling Problem”, *Management Science* 51(4) (2005) 629-640.

Solow, D. and J. G. Szmerekovsky, “Mathematical Models for Explaining the Emergence of Specialization in Performing Tasks”, *Complexity* 10(1) (2004) 37-48.

Szmerekovsky, Joseph and J. Zhang, “The Effect of Supply Chain Contracts on Supplier and Retailer Costs and Benefits in an RFID System”, chapter in *RFID in Operations and Supply Chain Management: Research and Applications*, 355-376.

Calkins, M., J. G. Szmerekovsky, S. Biddle, “Effect of Increased Time Spent Outdoors on Individuals with Dementia Residing in Nursing Homes”, *Journal of Housing for the Elderly*, 21(3/4) (2007) 211-228.

Papers under Review

Vairaktarakis, G. and J. G. Szmerekovsky, “Level Workforce Schedules for Paced Assembly Lines”, under revision for *Naval Research Logistics*.

Tilson, V., M. Sobel, and J. G. Szmerekovsky, “Scheduling Projects with Stochastic Activity Duration to Maximize EPV”, under second revision for *European Journal of Operational Research*.

Stevens, Charles and Joseph G. Szmerekovsky, “Using Employment Advertisements to Attract Applicants who Fit: Personality and the Wording of Advertisements”, submitted to *Journal of Managerial Issues*,

Ramaya, K., J. G. Szmerekovsky, and M. Cowen, “A Longitudinal Examination of Alliance Formation from 1987 through 2002”, submitted to *Journal of Transnational Management*.

Working Papers

Szmerekovsky, J. G. and P. Venkateshan, “Payment Scheduling to Induce Project Crashing”.

Solow, D., J. G. Szmerekovsky, “A Mathematical Model for Justifying the Emergence of Leadership”.

Kim, J.C. and J. G. Szmerekovsky, “Earnings Surprise and Market Activity”.

Dobson, G., J. G. Szmerekovsky, and V. Tilson, “Project Scheduling when Success is Uncertain”.

Cowing, M., C. Davino-Ramaya, K. Ramaya, and J. G. Szmerekovsky, “Patient Satisfaction and Health Care Delivery: Service, quality and outcomes”.

Presentations and Proceedings

“Project Scheduling when Success is Uncertain” (with Gregory Dobson and Vera Tilson)
—Presented at INFORMS Annual Meeting, Seattle, 2007.

“Patient Satisfaction and Health Care Delivery: Service, quality and outcomes” (with M. Cowing, C. Davino-Ramaya, and K. Ramaya)—Presented at INFORMS Annual Meeting, Seattle, 2007.

“Sense and Respond Logistics Model: A Prescription for Mitigating the U.S. Pharmaceutical Supply Chain Vulnerabilities and the Risk of Counterfeit Drugs” (with C. Enyinda) —Presented at IABPAD Conference, Dallas, 2007.

“Mitigating and Managing Global Supply Chain Risks and Security: Leveraging RFID Technology” (with C. Enyinda and D. Tolliver)—Presented at SAM Conference, Las Vegas, 2007.

“A Longitudinal Examination of Inter-Firm Cooperative Arrangements of U.S. Manufacturing Firms” (with K. Ramaya and M. Cowing)—Presented at WAM Conference, Missoula, 2007.

“Managing Value Chain through Lean Supply Chain Logistics: A comparison of military and commercial organizations” (with C. Enyinda)—Presented at ASBB National Meeting, Las Vegas, 2007.

“Payment Scheduling for a Project with Resource Constraints and Two Clients”—Presented at INFORMS Annual Meeting, Pittsburgh, 2006.

“Adaptive Scheduling of Projects with Stochastic Activity Durations” (with V. Tilson and M. Sobel) — Presented at INFORMS Annual Meeting, Pittsburgh, 2006.

“Project Crashing to Maximize Net-Present Value”—Presented at INFORMS Annual Meeting, San Francisco, 2005.

“Supply Chain Coordination with Sales Promotions and Price Contracts” (with J. Zhang)
—Presented at INFORMS Annual Meeting, San Francisco, 2005.

“Single Machine Scheduling under Market Uncertainty” —Presented at INFORMS Annual Meeting, Denver, 2004.

“Project Scheduling to Maximize Net Present Value: The Owner's Perspective”—Presented at INFORMS Annual Meeting, Atlanta, 2003.

“Managing Work-In-Progress Costs in General Productions Systems” (with G. Vairaktarakis)—Presented at INFORMS Annual Meeting, San Jose, 2002.

“Maximizing Project Net Present Value with Constant Periodic Cash Flows” (with G. Vairaktarakis)—Presented at INFORMS Annual Meeting, San Jose, 2002.

“Level Workforce Schedules for Two-Stage Transfer Lines” (with G. Vairaktarakis)—Presented at The 15th Cumberland Conference on Combinatorics, Graph Theory, and Computing, 2002.

“Maximizing Project Cash Availability Subject to Activity Dependent Resource Constraints” (with G. Vairaktarakis)—Presented at Manufacturing and Service Operations Management Conference, 2002.

“Minimizing the Weighted Flow Time of Projects with Cash In-Flows and Out-Flows” (with G. Vairaktarakis)—Presented at INFORMS Annual Meeting, Miami Beach, 2001.

Member of Editorial Board

International Journal of Revenue Management.

Ad-hoc Reviewer

I have served as an ad-hoc reviewer for *Management Science*, *Operations Research*, *Naval Research Logistics*, *European Journal of Operational Research*, *IIE Transactions*, *Production and Operations Management*, *Computers and Operations Research*, *International Journal of Operations Research*, *International Journal of Operations and Quantitative Management*, *Discrete Applied Mathematics*, *International Journal of Foundations of Computer Science* and John Wiley & Sons Inc.

TEACHING

Students acquire knowledge and skills in the classroom. Though mastering specific knowledge is necessary for establishing students’ credibility, the knowledge depreciates quickly and can not be tailored to the specific career needs of every student. In contrast, the skills that students develop can be adapted and applied to a variety of challenges and circumstances. Skills come in two forms: generic and specialized. Whenever possible I incorporate generic skills like group functionality, professionalism and communicating effectively in every course I teach. The specialized skills incorporated into my teaching are course specific. For example, in Operations Management the specific skill that students master is the application of mathematical models to managerial decision making. In all courses standard practices are presented; but, students are not just shown the resulting models and solutions. Rather, the entire process is presented to students starting with a managerial problem in words, continuing with modeling of the problem and ending with a solution and analysis of the model. Though exams and quizzes test the students’ knowledge of standard practices, group projects challenge students to follow the entire process on problems they have not seen solved in the classroom. This provides them with the opportunity to practice applying their skills under the guidance of the instructor before having to apply them in their own individual careers. In addition it

provides the instructor with the opportunity to assess and help improve the students' ability to develop and present a convincing argument.

At the undergraduate level I teach courses in Foundations of Management, Operations Management, and Management of Adaptive Organizations. At the graduate level I teach courses in Global Value Chain Management and Adaptive Planning in Logistics Systems. I also serve on the dissertation committees for Master's and Doctoral students in the areas of Transportation & Logistics and Computer Science. Currently, I am the dissertation chair for one student in Transportation & Logistics. My standard teaching load is five three credit courses each year. However, in the last two years I have received one course release for teaching large sections of Foundations of Management and two course releases for developing the courses Global Value Chain Management and Adaptive Planning in Logistics Systems.

Ratings of the instructor as a teacher and quality of course appear below from teaching evaluations over the last two years (full evaluations are available on request):

Spring 2006

BUSN 352: Operations Management (45 students)

Instructor as a teacher: 3.808 out of 5.

The quality of this course: 3.500 out of 5.

BUSN 352: Operations Management (38 students)

Instructor as a teacher: 4.000 out of 5.

The quality of this course: 3.773 out of 5.

BUSN 499: Management of RFID (22 students)

Instructor as a teacher: 4.400 out of 5.

The quality of this course: 3.600 out of 5.

Fall 2006

BUSN 350: Foundations of Management (76 students)

Instructor as a teacher: 3.879 out of 5.

The quality of this course: 3.655 out of 5.

TL 713: Global Value Chain Management (20 students)

Instructor as a teacher: 4.833 out of 5.

The quality of this course: 4.722 out of 5.

Spring 2007

TL 729: Adaptive Planning in Logistics Systems (18 students)

Instructor as a teacher: 5.000 out of 5.

The quality of this course: 4.882 out of 5.

PROFESSIONAL EXPERIENCE

North Dakota State University-College of Business, Fargo, ND

Assistant Professor, January 2003 – Present.

Alien Technology Faculty Fellow, August 2004 – Present.

Lecturer, August 2002 – January 2003.

My responsibilities include teaching, research, and service.

- I teach two masters level courses in Logistics: Global Value Chain Management and Adaptive Planning for Logistics Systems.
- I teach an undergraduate course in Operations Management, covering material on Forecasting, Statistical Process Control, Capacity/Aggregate Planning, Facility Layout and Inventory Control.
- I teach an undergraduate course in Foundations of Management, covering material on managerial Decision Making, Planning, Strategy, Organizational Structure, Communication, Motivation and Leadership.
- I teach a course on Management of Adaptive Organizations at both the undergraduate and graduate levels. The course covers: systems-thinking, sense-and-respond logistics, organizational learning, and technological developments.
- I am responsible for supervising MBA projects related to RFID technology.
- I have supervised an undergraduate project related to inventory management issues in the college's Small Business Institute.
- I conduct research in the areas of project management, supply chain management, and complex systems.
- I serve or have served on the department curriculum and assessment committee (chair 2007-2008), the library committee; the scholarship, alumni and external relations committee (chair 2005-2006); the college curriculum and assessment committee (secretary 2006-2008); and the ad hoc planning committee for the department of management, marketing and finance.
- I have served as a judge for the ND State Science Fair and the Fargo Public Schools Corporate Bee.

Case Western Reserve University-Weatherhead School of Management, Cleveland, OH

Department of Operations Graduate Assistant, August 2000 – May 2002.

Health Design.-Concord, CA

Statistical Consultant, July 2007 – Present.

IDEAS, Inc.-Kirtland, OH

Statistical Consultant, February 2002 – Present.

American Greetings Corporation-World Headquarters, Cleveland, OH
Management Science Intern, May 1999 – May 2001.

American Greetings is a leading manufacturer in the greeting card and party goods industries.

- **Capacity Management:** I provided the Corporate Scheduling Department with an EXCEL spreadsheet that levels capacity utilization over the production cycle. The leveling is done with the XA Solver callable libraries.
- **Forecasting During Product Revision:** I implemented a series of SAS and C programs to provide an initial estimate for the demand of new card products.
- **Productivity Analysis:** Using the SAS programming language I automated the production of reports that provided current information on account footage, exposures, sales and shipments.
- **Inventory Management:** Using CPLEX I developed an integer programming approach for determining lot sizes and safety stock levels so as to minimize costs while meeting service level requirements.

AFFILIATIONS

Member of Institute For Operations Research and Management Science (INFORMS)
Member of Golden Key National Honor Society
Member of Phi Beta Kappa National Honor Society

PERSONAL

U.S. Citizen. Born July, 1976 Cleveland, OH. Roman Catholic. Single.

REFERENCES

For recommendations please contact the following individuals:

Jang-Chul Kim

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North Dakota State University
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Rodney Traub

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George L. Vairaktarakis

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Co-Director of The Institute of Management and Engineering

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