



Value Chain Research by Faculty

Faculty Name	Research Areas	Research Accomplishments	Industry Experience
Rosemary T. Berger Assistant Professor of Industrial & Systems Engineering	<ul style="list-style-type: none"> Distribution Network Design Capacity Planning 	<ul style="list-style-type: none"> Developed a model to simultaneously optimize decisions of warehouse assignment, vehicle mode selection and routing for LTL shipments. Developed a model to analyze transportation expenses and identify shipment consolidation opportunities for spare parts distribution. Developed and deployed several models for topology design, capacity assignment and traffic routing for communications networks 	Logistics Software, Third-Party Logistics, Telecommunications
Jim Dearden Professor of Economics	<ul style="list-style-type: none"> Game Theory Auctions and Design of Trading Rules Economic Incentives of Contracts 	<ul style="list-style-type: none"> Developed model to explain overcapacity/undercapacity cycles in industries with a small number of competitors. Examined joint v. individual forecasting issues as well as strategic issues such as first-mover advantages. Developed cost sharing mechanisms (much like auction mechanisms) for firms involved in joint projects. Working on analysis of supplier rating and ranking mechanisms. Issues include the suppliers' strategic manipulation of product design to improve rankings and the design of weighting algorithms that assign rankings based on product attribute ratings. 	Aerospace, Government
Ravi Chitturi Assistant Professor of Marketing	<ul style="list-style-type: none"> Wireless/Mobile Technology: Design and Marketing of Applications User-Interface Design M-Commerce and CRM 	<ul style="list-style-type: none"> Analyzed emotional, behavioral, and monetary consequences of non-optimal design of hi-tech products. 	Semiconductors, Computers, Telecommunications
Parveen P. Gupta Associate Professor of Accounting	<ul style="list-style-type: none"> Risk Identification, Measurement and Mitigation within a Company's Value Chain Activities Design of Control Structures to Create Optimum Risk-return Trade-offs 	<ul style="list-style-type: none"> Developed an organization-wide risk assessment tool for a large North American Utility Developed a blue-print to conduct a risk and control assessment for a large service provider. 	Manufacturing and service industries

<p>Joseph C. Hartman Associate Professor of Industrial and Systems Engineering</p>	<ul style="list-style-type: none"> • Capacity Planning • Replacement Analysis • Transportation Logistics 	<ul style="list-style-type: none"> • Developed software to aid in transportation load/route planning • Developed capacity planning models, which account for technological change. • Developed solution approaches for large-scale (fleet) replacement analysis. • Developed fleet sizing models for large-scale applications. 	<p>Transportation (fleet sizing, route planning), Manufacturing (capacity planning)</p>
<p>Joy Ruihua Jiang Assistant Professor of Management</p>	<ul style="list-style-type: none"> • Use of Alliances for Technology Management 	<ul style="list-style-type: none"> • Developed a theoretical model to show when alliances can be used to develop/access new emerging technologies • Developed a model to show how firms should watch out for potential loss of proprietary knowledge to alliance partners 	
<p>Michael G. Kolchin Professor of Management and Chairman, Management and Marketing</p>	<ul style="list-style-type: none"> • Buying Strategies • Purchasing Effectiveness and Performance • Value Chain Effectiveness 	<ul style="list-style-type: none"> • Wrote three research monographs for the Center for Advanced Purchasing Studies: <ul style="list-style-type: none"> ○ (1) Purchasing in the Industrial, Institutional, Governmental, and Retail Sectors: A Comparative Study ○ (2) Purchasing Education and Training: Requirements and Resources ○ (3) Reducing the Transactions Costs of Purchasing Low Value Goods and Services. • Wrote purchasing text. • Wrote articles on purchasing strategy and performance 	<p>Retailing, Consumer packaged goods</p>

<p>Lin Lin</p>	<ul style="list-style-type: none"> • Knowledge Discovery and Management • Electronic Commerce and Internet Marketing • Decision Support Systems • Medical Informatics 	<ul style="list-style-type: none"> • Developed a model to predict customer's active online lifetime, use 10 major US e-tailers' web log to analyze the impact of customers' online lifetime on profitability and conversion tendency • Analyzed the relationship between customers' browsing behavior (number of pages per session and session time) and their purchase tendency • Designed, implemented, and tested a rule-based low back pain diagnosis system that stores rules in relational database and reasons using a modified certainty factor scheme (The system is being commercialized). • Designed and tested Bayesian Network algorithm that learns domain knowledge from data for the above application • Improved Image Retrieval Expert System (IRES), a system that is based on an adaptive neural network system and supports radiologists' image retrieval decision process. 	<p>Medical Informatics, E-Tailers</p>
<p>Jeffrey T. Linderoth Assistant Professor of Industrial & Systems Engineering</p>	<ul style="list-style-type: none"> • Financial Engineering • Mathematical Programming and Optimization • Decision Making Under Uncertainty • Parallel and Distributed Computing 	<ul style="list-style-type: none"> • Conducted development of specialized solution methodology and software for large supply chain planning problems • Participated in design and implementation of an application for optimal portfolio selection and the testing of portfolio selection strategies. • Designed and implemented optimization-based resource planning system for a large industrial gas company. • Developed and implemented a mortgage backed securities selection model for a large financial institution. 	<p>Financial services, Logistics</p>
<p>James M. Maskulka Associate Professor of Marketing</p>	<ul style="list-style-type: none"> • Managing Coordination and Integration of Marketing Communications Across Value Chain Partners 		<p>Advertising</p>

<p>Teresa McCarthy Assistant Professor of Marketing and Supply Chain</p>	<ul style="list-style-type: none"> • Interfirm Demand Integration 	<ul style="list-style-type: none"> • Developed and tested a model of interfirm demand integration (collaborative forecasting, demand planning, and demand management) • Bridges the gap between demand and supply chain management • Looks at the impact of interfirm demand integration on supply chain performance 	<p>Consumer packaged goods, Air cargo</p>
<p>Eugene Perevalov Assistant Professor of Industrial & Systems Engineering</p>	<ul style="list-style-type: none"> • Product portfolio analysis 	<ul style="list-style-type: none"> • Developed a machine learning based approach for combining available expert predictions for achieving superior long term returns on a stock portfolio • Developed a quantitative model for product portfolio selection under high uncertainty and unreliable quantitative forecasts 	<p>Semiconductor, Financial services</p>
<p>Ted K. Ralphs Assistant Professor of Industrial & Systems Engineering</p>	<ul style="list-style-type: none"> • Supply Chain Logistics • Transportation, Distribution & Warehousing • Network Design and Analysis • Mathematical Programming and Optimization • Auction and Bidding Algorithms • Capacity & Demand Management 	<ul style="list-style-type: none"> • Author of several software package for large-scale parallel optimization. • Author of software for solving various logistics problems. • Board member for the Computational Infrastructure for Operations Research (COIN-OR) initiative, a consortium of researchers in academia and industry developing open source software for operations research. • Currently consulting with two large companies on development of optimization software. 	<p>Computing, software; process industries</p>
<p>Catherine Ridings Assistant Professor of Information Systems</p>	<ul style="list-style-type: none"> • Virtual Communities • e-Commerce 	<ul style="list-style-type: none"> • Developed and tested a model of trust-building mechanisms in virtual communities • Analyzed gender differences in computer-mediated communication • Developed a framework to understand virtual communities as knowledge management systems 	
<p>Andrew M. Ross Assistant Professor of Industrial and Systems Engineering</p>	<ul style="list-style-type: none"> • Uncertainty and Stochastic Processes • Auctions • Outsourcing 	<ul style="list-style-type: none"> • Allocating outsourced work to contractors • Discovering gaming opportunities in electric-power auctions • Analyzing customer demand for dial-up internet access • Discovering capacities of outsourcers 	<p>Telecommunications, utility</p>
<p>Michael D. Santoro Assistant Professor of Management</p>	<ul style="list-style-type: none"> • Organizational Learning through External Sources such as: <ul style="list-style-type: none"> ◦ Strategic Alliances 	<ul style="list-style-type: none"> • Examined industry-university collaborative ventures and their role in advancing knowledge and new technologies 	<p>Information Services and Data Processing, Biotechnology, Pharmaceuticals,</p>

	<ul style="list-style-type: none"> ○ Outsourcing ○ Contracting 	<ul style="list-style-type: none"> • Currently investigating the structure, processes, and outcomes of strategic alliances in the biotechnology-pharmaceutical arena • Currently examining industry's use of external research organizations that include consulting firms, university research centers, technical associations, government agencies, and other industrial firms 	Semiconductors, Optics, Metals, Chemicals, and Manufacturing.
<p>Susan A. Sherer, Co-Director Kenan Professor of Information Technology Management</p>	<ul style="list-style-type: none"> • Measuring value from IT investments in supply chain • Information enabled strategies • Outsourcing and the role of information technology 	<ul style="list-style-type: none"> • Summarized best practices in assessing payoff from IT investments • Developed a framework for assessing payoff from organizational change • Developed a framework for IT outsourcing including risk implications • Studied role of intermediary and technology in collaborative networks 	Software, Manufacturing
<p>K. Sivakumar Tauck Professor of Marketing</p>	<ul style="list-style-type: none"> • Knowledge/Technology management and innovation generation in supply chains 	<ul style="list-style-type: none"> • Developed a model describing how interactions between buyers and sellers in supply chains can create radical and incremental innovations and the role of factors moderating the interaction-innovation link. • Developed a model of manifestation and implications of knowledge redundancy among members of supply chains. • Developed a model of independent product development vs. licensing in new product development decisions based on perceived patent value and other factors. 	
<p>Lawrence V. Snyder, Co-director Assistant Professor, Dept. of Industrial and Systems Engineering</p>	<ul style="list-style-type: none"> • Supply chain management under supply and demand uncertainty • Facility location/network design • Logistics and transportation 	<ul style="list-style-type: none"> • Developed models to optimize facility location decisions under the threat of disruptions • Developed joint location-inventory models with random demands and costs • Developed algorithm and wrote software for multi-objective vehicle routing problem for perishable goods • Currently studying supply disruptions in multi-stage supply chain models 	Supply chain software and consulting, high-value manufacturing, perishable goods distribution

<p>Robert H. Storer Professor of Industrial and Systems Engineering</p>	<ul style="list-style-type: none"> • Manufacturing Logistics • Heuristic Optimization, • Scheduling and Routing, • Approximate Dynamic Programming, 	<ul style="list-style-type: none"> • Developed Problem Space Search algorithms for solving complex industrial combinatorial optimization problems in scheduling and routing. • Novel new work in non-regular scheduling and rescheduling problems. • Approximate Dynamic Programming solutions to complex logistics problems. 	<p>Process, Third Party Logistics, Manufacturing</p>
<p>Tom (Qingjiu) Tao Assistant Professor of Management</p>	<ul style="list-style-type: none"> • Strategic Alliances • Competitive Intelligence 	<ul style="list-style-type: none"> • Alliance strategies in international market entry • Looks at the inter-firm cooperation issues (timing, partner selection, performance evaluation, etc.) • Strategic environment analysis and competitive intelligence 	<p>Aerospace, Automobile</p>
<p>Aur�lie C. Thiele Assistant Professor Industrial & Systems Engineering</p>	<ul style="list-style-type: none"> • Revenue management • Dynamic pricing • Modelling of uncertainty • Risk-aversion in operations management 	<ul style="list-style-type: none"> • Developed tractable models for optimal inventory management under imperfect demand information in single stations, series systems and tree supply networks. • Developed a probability-free, robust framework for risk-averse decision-making in operations management. • Working on robust approaches for joint multi-period pricing and inventory allocation problems. 	<p>Computers, Government, Aerospace</p>
<p>Robert J. Trent Associate Professor of Management</p>	<ul style="list-style-type: none"> • Global sourcing • Organizational design 	<ul style="list-style-type: none"> • "Procurement and Supply Organizational Design Research," a research project that focuses on various organizational design issues, changes, and trends with procurement and supply chain management • "Global Sourcing Research Project," a research project conducted with Robert M. Monczka, Ph.D. This research involves (1) a worldwide mail survey of global sourcing practices and issues, (2) case analyses involving leading North American firms, and (3) developing a model of international purchasing and global sourcing 	<p>Automobile, Confectionary and Chemical</p>
<p>Todd Watkins Associate Professor of Economics</p>	<ul style="list-style-type: none"> • Defense supplier networks • Collaborative network synergies in manufacturing • Technology policy implications • Product development processes. 	<ul style="list-style-type: none"> • Significant survey and case research in manufacturing, particularly small enterprises. • Major study of defense and aerospace industry supplier relations. • Research on economics and evaluation of collaborative R&D programs. 	<p>Defense manufacturing, Photonics, Semiconductors, Aerospace</p>

		<ul style="list-style-type: none"> Professional experience in product design and development. 	
George R. Wilson Associate Professor of Industrial and Systems Engineering	<ul style="list-style-type: none"> Inventory and Service Logistics Supply Chain Logistics Transportation, Distribution & Warehousing Capacity & Demand Management 	<ul style="list-style-type: none"> For the last several years, a research and development effort has been under way with the Service Parts Division of a large U.S. company to transform a logistics network stocking policy from one based on fill rate to one that is based on time-to-delivery metrics. Substantial cost savings in providing the same performance as the old policy have been realized to date by adopting the new policy in the U.S. Work is currently under way to adapt the U.S. model to the company's global service parts business environment 	Electronics, computers, process, logistics
S. David Wu, Dean, P.C. Rossin College of Engineering & Applied Science	<ul style="list-style-type: none"> Supply Chain Logistics Quantitative analysis of value chain tactics and strategies Partnership/Coordination/Contracting Capacity and Demand Management Procurement Auctions Product Development 	<ul style="list-style-type: none"> Develop strategic capacity planning models for a large US semiconductor manufacturer Develop supply chain inventory strategies for high-tech contract manufacturing Modeling capacity reservation contracts and pricing strategies Develop portfolio analysis tools for new product development decisions Develop decision analysis systems that coordinate production and transportation logistics 	Semiconductors, electronics, manufacturing, automotive, third party logistics
Oliver Yao Assistant Professor of Supply Chain and Information Systems	<ul style="list-style-type: none"> Measuring impacts of electronic commerce on supply chain 	<ul style="list-style-type: none"> Developed a model to show under what conditions there will be benefits from VMI and how these benefits will be distributed among members of the supply chain. Tested effects of disintermediated distribution and use of electronic order taking on customer service levels, price, and price dispersion Examined the diffusion levels of the Internet technology in the food industry and found that a large percentage of firms were still using EDI technology although the Internet had been increasingly adopted. 	Federal government, Food, Transport