

OWEN Q. WU

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Research Interests

Operations Management for Energy Sustainability:

- *Investment and operations management of energy resources*, including conventional and renewable energy resources and energy storage
- *Renewable energy in electricity market competition*: theories and empirics
- *Sustainable energy supply*: efficiency, reliability, and environmental impacts
- *Energy demand management*: demand-side energy efficiency, demand response, grid integration of electrical vehicles

Supply Chain Management:

- Empirical research on supply chain management and financial performance
- Supply chain structure and risk management

Professional Experience

Kelley School of Business, Indiana University <i>Associate Professor of Operations Management</i>	2014 - present
Ross School of Business, University of Michigan <i>Assistant Professor of Operations and Management Science</i>	2006 - 2014
Sauder School of Business, University of British Columbia <i>Instructor</i>	2005
Cheung Kong Graduate School of Business, China <i>Visiting Scholar</i>	2004
Hong Kong Chinese University, China <i>Visiting Scholar</i>	2002

Education

University of British Columbia Ph.D. in Management Science, with minor in Finance	2006
Hong Kong University of Science and Technology M.Eng. in Industrial Engineering and Engineering Management	2001
Shanghai Jiao Tong University B.Eng. in Mechanical Engineering	1999

Articles Published in Refereed Journals

Energy Research:

- Hyun-soo Ahn, Derek D. Wang, Owen Q. Wu. 2019. Asset selling under debt obligations. *Operations Research*, forthcoming.
- Majid Al-Gwaiz, Xiuli Chao, Owen Q. Wu. 2017. Understanding how generation flexibility and renewable energy affect power market competition. *Manufacturing & Service Operations Management*, **19**(1) 114-131.
- Owen Q. Wu, Roman Kapuscinski. 2013. Curtailing intermittent generation in electrical systems. *Manufacturing & Service Operations Management*, **15**(4) 578-595.
- Owen Q. Wu, Derek D. Wang, Zhenwei Qin. 2012. Seasonal energy storage operations with limited flexibility: the price-adjusted rolling intrinsic policy. *Manufacturing & Service Operations Management*, **14**(3) 455-471.
- Owen Q. Wu, Volodymyr Babich. 2012. Unit-contingent power purchase agreement and asymmetric information about plant outage. *Manufacturing & Service Operations Management*, **14**(2) 245-261.
- David I. Shuman, Mingyan Liu, Owen Q. Wu. 2011. Energy-efficient transmission scheduling with strict underflow constraints. *IEEE Transactions on Information Theory*, **57**(3) 1344-1367.
- Owen Q. Wu, Hong Chen. 2010. Optimal control and equilibrium behavior of production-inventory systems. *Management Science*, **56**(8) 1362-1379.

Supply Chain Management Research:

- Owen Q. Wu, Hong Chen. 2016. Chain-to-chain competition under demand uncertainty. *Journal of the Operations Research Society of China*, **4**(1) 49-75.
- Hong Chen, Owen Q. Wu, David D. Yao. 2010. On the benefit of inventory-based dynamic pricing strategies. *Production and Operations Management*, **19**(3) 249-260.
- Hong Chen, Murray Z. Frank, Owen Q. Wu. 2007. U.S. retail and wholesale inventory performance from 1981 to 2004. *Manufacturing & Service Operations Management*, **9**(4) 430-456.
- Hong Chen, Murray Z. Frank, Owen Q. Wu. 2005. What actually happened to the inventories of American companies between 1981 and 2000? *Management Science*, **51**(7) 1015-1031.

Other Research:

- Julian Douglass, Owen Q. Wu, William T. Ziemba. 2004. Stock ownership decisions in defined-contribution pension plans. *Journal of Portfolio Management*, **30**(4) 92-100.
- Benjamin P. C. Yen, Owen Q. Wu. 2004. Internet scheduling environment with market-driven agents. *IEEE Transactions on Systems, Man, and Cybernetics, Part A*, **34**(2) 281-289.

Refereed Book Chapters

- Owen Q. Wu, Yanfeng Ouyang. 2017. Supply chain design and optimization with applications in the energy industry. In *Advances and Trends in Optimization with Engineering Applications*,

T. Terlaky, M. F. Anjos, S. Ahmed (eds.), Society for Industrial and Applied Mathematics (SIAM), Philadelphia.

Adam A. Wadecki, Volodymyr Babich, Owen Q. Wu. 2012. Manufacturer competition and subsidies to suppliers. In *Supply Chain Disruptions: Theory and Practice of Managing Risk*, H. Gurnani, A. Mehrotra, S. Ray (eds.), Springer-Verlag, London.

Completed Working Papers

Telesilla O. Kotsi, Owen Q. Wu, Alfonso J. Pedraza-Martinez. 2020. Donations for the refugee crisis: Cash versus in-kind assistance.

Owen Q. Wu, Şafak Yücel, Yangfang Zhou. 2020. Smart charging of electric vehicles.

Ali Shantia, Owen Q. Wu, Roman Kapuscinski. 2020. Wind power generation strategic bidding in competitive electricity market.

Roman Kapuscinski, Owen Q. Wu, Santhosh Suresh. 2020. Operations and investment of energy storage in a tree network.

Wenbin Wang, Owen Q. Wu, Gilvan C. Souza. 2020. Energy efficiency implies cost efficiency? Revisiting design and operations of combined heat and power systems.

Eric M. Webb, Owen Q. Wu, Kyle D. Cattani. 2019. Coordinating energy efficiency and incentive-based demand response.

Eric M. Webb, Gilvan C. Souza, Owen Q. Wu. 2019. Utility-owned combined heat and power: Improving reliability and lessening environmental impact.

Harish Krishnan, Owen Q. Wu. 2017. On the impact of decision speed in strategic supply chain decentralization.

Case Study, Review and Tutorial

Owen Q. Wu, Xiuli Chao. 2017. Can renewable energy be too much of a good thing? *M&SOM Review*, May 8, 2017.

Owen Q. Wu. 2011. Applying production and inventory management theory to sustainable energy systems. INFORMS Tutorial, INFORMS Annual Meeting, Charlotte, NC. <http://pages.iu.edu/~owenwu/academic/Tutorial-OM-Energy.pdf>

Owen Q. Wu, Nathan D. Bennett. 2010. Sustainability at Detroit Edison: using natural gas as a transition fuel. *Tauber Institute for Global Operations and William Davidson Institute*, case 1-429-143.

Courses Taught

Master:

Machine Learning, MBA/MSIS elective, 2020 to present

Machine Learning, Kelley Direct Online, 2019 to present

Operations Management, MBA core, 2012 to 2019

Introduction to Operations Management, Kelley Connect Week, 2016-2017

Applications of Business Analytics: Energy Management, Kelley Direct Online, 2018-2019
Multidisciplinary Action Projects, 2007-2008

PhD:

Dynamic Programming, 2018 to present
Topics in Operations Research and Energy Management, 2015
Interface of Operations and Finance, 2007

Undergraduate:

Supply Chain Management, 2011-2014
Operations Management, Core (2007-2011), *Business Minor* (2012-2013)

Honors and Grants

Research:

Grant Thornton Scholar Award, Kelley School of Business, 2019-2021
Paul Kleindorfer Award in Sustainability, Production and Operations Management Society (POMS), 2017.
Advisor for the student paper "Mind the gap: Coordinating energy efficiency and demand response," Finalist for the 2017 POMS College of Sustainable Operations Best Student Paper Competition.
University of Michigan's Global Challenges for a Third Century Grant (with J. Stein, I. Hiskens, S. Parthasarathy, J. Kelly, J. Levine, G. Keoleian, T. Eرسال). "Sustainable transportation for a third century: An interdisciplinary approach to addressing the last mile problem for enhanced accessibility." \$299,878, 2013-2014.
University of Michigan's M-Cubed Grant (with A. Atreya, A. Violi). "Development of an autonomous biomass reactor to create carbon neutral transportation fuels and prevent forest fires." \$60,000, 2013-2014.
University of Michigan's Center for International Business Education Grant (with X. Chao). "Identification, classification, and analysis of risks of Chinese suppliers." \$8,500, 2009-2010.
First Place, 2005 Manufacturing & Service Operations Management Society Student Paper Competition.
E. D. MacPhee Memorial Fellowship, University of British Columbia, 2001 and 2005.
University of British Columbia Graduate Fellowship 2002-2004.

Teaching:

Excellence in Teaching Award, MBA Program, Kelley School of Business, 2020.
Distinguished Teaching Award, Doctoral Program, Kelley School of Business, 2019.
Trustee Teaching Award, Kelley School of Business, Indiana University, 2018.
Professor with the Best PowerPoint Presentations, by MBA classes of 2017 and 2018.

Finalist, Trustee Teaching Award, Kelley School of Business, Indiana University, 2017, 2016.

BBA Teaching Excellence Award, Ross School of Business, University of Michigan, 2011, 2009.

Faculty advisor for the student project "Landfill gas utilization as a sustainable energy source,"
First Place at the 2008 Spotlight! Competition at Tauber Institute for Global Operations.

Service:

Manufacturing & Service Operations Management Meritorious Service Award, 2019, 2017, 2016,
2014, 2012, 2010, and 2008.

Operations Research Meritorious Service Award, 2012.

Sustainability-Focused Industry Projects Advised

PepsiCo: Achieving 100 Percent Renewable Energy, 2019

Cummins: Remanufacturing process improvement, 2017

BorgWarner: Reducing industrial wastes and improving waste treatment, 2016

Detroit Edison: Operational and financial analysis of using petroleum coke and natural gas at
Monroe power plant, 2015

Detroit Edison: Optimizing redesign of boiler makeup water feed system, 2014

Graham Partners: Portfolio-wide energy management, 2013

Dow Chemical: Improving supply chain sustainability, 2011

Meritor: Life cycle assessment for tandem axles, 2011

Detroit Edison: Shaping the future of fossil-fuel power generation, 2010

Boeing: Embedding design for environment in the Boeing design process, 2009

UPS: Landfill gas utilization as a sustainable energy source, 2008

Velocys: Biomass-to-liquid and waste-to-liquid markets, 2007

Other Industry Projects Advised

Target Corporation: Improving trailer load accuracy, 2020

Pacific Gas & Electric: Streamlining gas leak detection and repair, 2018

3M: Protective eyewear portfolio and supply chain optimization, 2015

Boeing 777: Lean logistics plan for material delivery, 2014

Delphi: Creating value through global copper supply chain improvements, 2012

Domino's Pizza: Operational improvements at corporate stores, 2007

Invited Presentations to Industry Participants

Energy supply economics and energy market analysis (panel moderator), Spring Forum of the
Lugar Center for Renewable Energy, Indianapolis, 2017

Achieving energy sustainability through energy demand management, Kelley Forum on
Supply Chain Analytics (with focus on sustainability), 2015

Seasonal energy storage operations with limited flexibility, DTE Energy, 2009

Invited Research Seminars

Johnson College of Business, Cornell University, 2020

College of Business Administration, University of Illinois at Chicago, 2020

School of Business, University of California, Riverside, 2020

Antai College of Economics and Management, Shanghai Jiao Tong University, 2019

School of Public and Environmental Affairs, Indiana University, 2019

Kelley School of Business, Indiana University, 2019

Shanghai University of Finance and Economics, 2018

Krannert School of Management, Purdue University, 2014

Foster School of Business, University of Washington, 2014

Odette School of Business, University of Windsor, 2013

Olin Business School at Washington University in St. Louis, 2012

Hosmer-Hall Luncheon, Ross School of Business, University of Michigan, 2012

Kenan-Flagler Business School, University of North Carolina, 2012

Fuqua School of Business, Duke University, 2012

Tepper School of Business, Carnegie Mellon University, 2012

College of Management, Georgia Institute of Technology, 2011

Kellogg School of Management, Northwestern University, 2009

Hosmer Luncheon, Ross School of Business, University of Michigan, 2009

Sauder School of Business, University of British Columbia, 2009

Harvard Business School, Harvard University, 2006

Stanford Graduate School of Business, Stanford University, 2006

Columbia Business School, Columbia University, 2006

Wharton School, University of Pennsylvania, 2006

Stern School of Business, New York University, 2006

Marshall School of Business, University of Southern California, 2006

Ross School of Business, University of Michigan, 2005

Academic Conference Presentations (Presenting Author)

Smart charging of electric vehicles

- M&SOM Conference, Singapore, 2019
- INFORMS Meeting, Seattle, WA 2019

Mind the gap: Coordinating energy efficiency and demand response

- POMS Conference, Seattle, WA 2017
- INFORMS International Meeting, 2016
- M&SOM Conference, University of Auckland, 2016

Understanding how generation flexibility and renewable energy affect power market competition

- INFORMS Meeting, Philadelphia, PA 2015
- INFORMS Meeting, San Francisco, CA 2014
- M&SOM Conference, University of Washington, 2014

Operations and investment of energy storage in a tree network

- INFORMS Meeting, Phoenix, AZ 2018
- INFORMS Meeting, San Francisco, CA 2014

Curtailling intermittent generation in electrical systems

- INFORMS Meeting, Minneapolis, MN 2013

Applying production and inventory management theory to sustainable energy systems, INFORMS Tutorial, INFORMS Meeting, Charlotte, NC 2011

Managing intermittent and flexible generation resources in an electricity system

- Sustainable Operations Special Interest Group Conference, University of Michigan, 2011
- INFORMS Meeting, Austin, TX 2010

Seasonal energy storage operations with limited flexibility

- INFORMS Meeting, Austin, TX 2010
- INFORMS Meeting, San Diego, CA 2009

Unit-contingent power purchase agreement and asymmetric information about plant outage

- INFORMS Meeting, San Diego, CA 2009
- Interface of Finance, Operations, and Risk Management SIG Conference, M.I.T., 2009
- INFORMS Meeting, Washington DC, 2008

Inventory control and risk management of natural gas storage assets

- INFORMS Meeting, Seattle, WA 2007

Optimal control and competitive equilibrium of production-inventory systems

- INFORMS Meeting, San Francisco, CA 2005
- M&SOM Conference, Northwestern University, 2005
- Applied Probability Conference, Ottawa, Canada, 2005

Inventory performance of U.S. retail, wholesale and manufacturing companies from 1981 to 2003

- INFORMS Meeting, San Francisco, CA 2005

What actually happened to the inventories of American companies between 1981 and 2000?

- Multi-Echelon Inventory Conference, Northwestern University, 2005
- CORS/INFOMRS Joint International Meeting, Banff, Canada, 2004
- M&SOM Conference, Cornell University, 2002

Optimal pricing and production in a production-inventory system

- M&SOM Conference, Eindhoven, Netherlands, 2004

Optimal pricing and replenishment in an inventory system

- Applied Probability Conference, Beijing, China, 2004
- Revenue Management Conference, M.I.T., 2004
- CORS/INFOMRS Joint International Meeting, Banff, Canada, 2004

Chain-to-chain competition under demand uncertainty

- INFORMS Meeting, Atlanta, 2003

Service to the Profession

Journals:

Guest Associate Editor for *Management Science*, 2017, 2020 (Special Issue on Climate Change)

Guest Associate Editor for *Manufacturing & Service Operations Management*, 2016-present

Senior Editor for *Production & Operations Management*, 2020-present

Reviewer for *Management Science*, *Operations Research*, *Manufacturing & Service Operations Management*, *Naval Research Logistics*, *Production & Operations Management*, *IIE Transactions*, *Mathematical Methods of Operations Research*, *Energy Economics*, *Energy Journal*, and others

Conferences and Fora:

Organizer for 2021 MSOM Conference at Indiana University

Organizer for AI/Machine Learning Colloquium at Indiana University, 2020

Vice President for Meetings, POMS College of Sustainable Operations, 2018-2020

Organizer and panel moderator for the Spring Forum of the Lugar Center for Renewable Energy, 2017

Track chair for the Energy and Natural Resources track for POMS Annual Conference, 2017

Session organizer for M&SOM sessions on energy sustainability at INFORMS Annual Meetings, 2014-2016, 2018-2019

Discussant for Early-Career Sustainable Operations Workshop, 2019, 2020

Discussant for Sustainable Operations Special Interest Group Conference, 2017, 2018

Invited energy industry speaker for the Inaugural Conference of the Sustainable Operations Special Interest Group, 2011

Competitions:

Judge for the POMS Student Paper Competition, 2017

Judge for M&SOM Student Paper Competition 2006-2009, 2012, 2014-2017

Service to the School and University

Academic Council of Kelley School of Business

Tenure-track representative, 2018-2020

MBA program:

Developed MBA course on Business Applications of Machine Learning, 2019-2020

Member of Kelley MBA policy committee, 2014-present

Designed major improvements to MBA Core course, 2014-2015

Undergraduate program (Michigan):

Core course coordinator for Operations Management, 2007-2011

Supply Chain Management course development, 2011

PhD program:

Course development: Topics in Operations Research and Energy Management (Indiana), 2015

Course development: Interface of Operations and Finance (Michigan), 2007

PhD program committee member (Michigan), 2009-2011

PhD students teaching mentor (Michigan), 2007-2013

Doctoral students advised or co-authored on job-market papers:

Telesilla Kotsi (2018-2020), position on graduation: Assistant Professor at Fisher College of Business, Ohio State University

Eric Webb (2015-2018), position on graduation: Assistant Professor at Lindner College of Business, University of Cincinnati

Santhosh Suresh (2008-2014), position on graduation: McKinsey&Company

Derek (Dadi) Wang (2006-2012), position on graduation: Assistant Professor at Desautels Faculty of Management, McGill University

Dissertation committee member of other doctoral students:

Shanshan Guo (2015), Majid Al-Gwaiz (2013), Jie Ning (2013), David Shuman (2010), Shanshan Hu (2009)