

James E. Paine

Academic Address

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Google Scholar: <https://scholar.google.com/citations?user=2gnmUwQAAAAJ>

Research Interests Behavioral Operations Management, Resource Management in Multi-Audience settings, Dynamic Modeling, Compartmental Differential Equation Modeling, Supply Chain Research, Human-Algorithm Interactions in Operations

Education **Massachusetts Institute of Technology** Cambridge, MA

Ph.D. in Management Science in the System Dynamics group
GPA (Expected June 2023): 4.9/5.0
Thesis (Working Title): Essays in Dynamic Supply Chain Systems and Service Delivery Systems
Advisors: Professor Hazhir Rahmandad, Professor Rogelio Oliva, and Professor John Sterman

Master of Science in Management Research, September 2020
Thesis: Algorithmic Intervention to Mitigate Inventory and Ordering Amplification in Multi-Echelon Supply Chains
<https://dspace.mit.edu/handle/1721.1/129114>
Advisors: Professor Hazhir Rahmandad and Dr. David R. Keith

Wake Forest University, School of Business Winston Salem, NC

Master of Business Administration, May 2014, Graduated with Distinction, GPA 3.98/4.00. Dual concentration in Business Analytics and Marketing. Obtained ASQ Six Sigma Black Belt, elected Treasurer of the School of Business Student Government, Leadership Award

Georgia Institute of Technology Atlanta, GA

Master of Science in Mechanical Engineering, May 2012, GPA: 3.90/4.00. Completed degree while working full time for GE-Hitachi Nuclear Energy

University of Florida Gainesville, FL

Bachelor of Science in Chemical Engineering, May 2009, Cum Laude, GPA 3.87/4.00. Minor in Operations and Business Management.

Awards MIT Connect Arts Community and Computing Challenge – First Runners Up (2019), MBA Leadership Award (2014), Outstanding Business Analytics Graduate (2014), Outstanding Marketing Graduate (2014), GE Award to Inventors (2009)

Certifications Kaufman Teaching Certificate Program (2021), Microsoft Office Specialist Excel 2016 Expert, License G564-0793 (2017), ASQ Certified Six Sigma Black Belt, License 15421 (2014), General Electric Lean Six Sigma Green Belt and Lean Manufacturing certifications (2009).

Professional Development Behavioral Operations Management Summer Institute (2019), General Electric Edison Engineering Leadership Development Program (2011), General Electric Foundations of Leadership training at the John F. Welch Leadership Center (2010), General Electric Advanced Courses in Engineering (2010)

Research Experience **MIT Sloan School of Management** Cambridge, MA

Advisors: John Sterman and Hazhir Rahmandad
Focusing on Behavioral Operations Management and Business Analytics applications, specifically modeling systems in which upstream decision making with imperfect information has long-term consequences, often beyond the attention span of the original decision maker. Examples include an extended view of product life-cycle management that stretches from initial concept to final product disposition. (August 2018-Present)

GE-Hitachi & Global Nuclear Fuels (GNF) Wilmington, NC

Bulk Isotope Generation Process Engineer. Developed new procedures to produce specific irradiated isotope parent/daughter pairs in light water reactors for medical applications resulting in three US and European patent applications. Solely responsible for the development of material and research within the process lab. (May – August 2008)

- Publications Keith, D., Taylor, L., Paine, J. (2021). *When Funders Aren't Customers: Explaining Capability Under-Investment in Multi-Audience Organizations*. Organization Science. <https://doi.org/10.1287/orsc.2022.1579>
- Paine, J. (September 2020). *Taming the Bull - Algorithmic Intervention to Mitigate Inventory and Ordering Amplification in Multi-Echelon Supply Chains*. Thesis submitted in partial fulfillment of the requirements for the MIT SM in Management. <https://hdl.handle.net/1721.1/129114>
- Paine, J. (January 2020). RES.15-004. *System Dynamics: Systems Thinking and Modeling for a Complex World*. Massachusetts Institute of Technology: MIT OpenCourseWare, <https://ocw.mit.edu>. License: Creative Commons BY-NC-SA, 2020
- Paine, J. et al. *Column geometry to maximize elution efficiencies for molybdenum-99*. Canadian Patent Office CA2735612, European Patent Office EP2375421, United States PTO US9240253. First Issued Jan 19, 2016
- Paine, J., Vare, M., Wirtter, D. (2013). *Green Recalls – White Paper* written for Inmar Intelligent Commerce Networks, 2013 Inmar Analytics Forum in Winston-Salem, NC presented by Doug Witter and Mark Vare
- Papers under Review Paine, J. *Dynamic Supply Chains with Endogenous Allocations*. Second Minor Revision under review at the System Dynamics Review. Working paper available at <https://tinyurl.com/SDRDynamicSupplyChains>
- Paine, J., in-progress provisional patent, HanesBrands Proprietary Information, "Method to Iteratively Derive Optimal Minimum Number of Assortments from a Larger Population of Sized Garments." Applied April 2017
- Working Papers Paine, J. (2022). *Rearranging the Deck Chairs on the Titanic: A Simulation Model of Behavioral Resource Utilization Under Crisis*. Work-in-Progress. <https://github.com/jpain3/Rearranging-the-Deck-Chairs>
- Paine, J. (2022). *Behaviorally Grounded Model-Based and Model Free Cost Reduction in a Simulated Multi-Echelon Supply Chain*. Working Paper. <https://doi.org/10.48550/arXiv.2202.12786>
- Lopez, J. and Paine, J. *The Evolution of Trust in Supply Chains: A Feedback Approach*. Working paper. <https://tinyurl.com/FeedbackTrustSCR1>
- Paine, J (June 6, 2022). *Applying an Endogenized PID Controller Design to Speculative Bubble Formation*. Working Paper. <http://dx.doi.org/10.2139/ssrn.4137800>

Teaching
Experience

MIT Sloan School of Management

Cambridge, MA

Kaufman Teaching Certificate Program

KTCP is an interactive workshop series intended for late-program graduate students and postdocs interested in academic careers or developing skills to support their teaching at MIT. Topics include designing a course, preparing a lesson plan, assessing, and providing feedback to students, creating an effective and welcoming classroom climate, along with others. (Spring 2021)

15.768: Management of Service Operations, Teaching Assistant

Under the supervision of Dr. Zeynep Ton. Managed course announcements, grading, and participation of a course with 150+ students. Recorded student comments during case-based discussions for later assessment. Graded homework and project responses both at an individual and team level. Addressed individual students' questions and needs.

Semesters taught and average overall teaching scores:

Spring 2019 (5.9/7.0), Fall 2019 (6.6/7.0), Fall 2020 (6.6/7.0)

15.871: Introduction to System Dynamics

15.8731: System Dynamics: Tools for Solving Complex Problems

15.873: System Dynamics for Business and Policy, Teaching Assistant

Under the supervision of Dr. Hazhir Rahmandad. Managed student and grading logistics in a series of partially overlapping courses consisting of 100+ students, mixed between undergraduates, graduates, and professional backgrounds. Maintained, developed, and expanded on the MITx Edge-based online assignment platform, graded individual and group homework, and helped with weekly office hours. During the onset of the COVID-19 pandemic, managed students during the class in a hybrid environment.

Semesters taught and average overall teaching scores:

Fall 2020 (15.8731: 6.5/7.0, 15.871: 6.9/7.0, 15.873: 6.7/7.0)

Fall 2021 (15.871: 6.3/7.0, 15.873: 6.8/7.0)

System Dynamics: Systems Thinking and Modeling for a Complex World, Course Developer and Instructor

Created and taught an MIT Independent Activities Period session that provides an overview of System Dynamics, a methodology and modeling system for identifying and designing solutions for complex socio-technical problems, via presentations and hands-on simulations. Made available under a Create Commons license as part of MIT's online OpenCourseWare system as course number RES.15-004. (January 2020)

Teaching
Experience
(cont'd.)

Inmar – Intelligent Commerce Networks

Winston Salem, NC

Lean Six Sigma, Course Developer and Instructor

Taught, improved upon, and supported a Lean Six Sigma Yellow Belt certification class and developed a trial Lean Six Sigma Green Belt certification course that focused on both internal company and wider community participants (May 2013-June 2015).

University of Florida

Gainesville, FL

ECH3264: Elementary Transport Phenomenon, Teaching Assistant

Under the supervision of Dr. Jennifer S. Curtis and Dr. Aravind Asthagiri. Managed the implementation of Fluent, Inc FlowLab 1.2.14, an academic fluid modeling program, in a classroom setting. Created and implemented improvements to the templates of FlowLab and associated homework assignments. Provided academic and technical assistance and graded the submissions of a class of 20+ students. (August 2007-May 2009)

Academic
Service

Journal Reviewer for:

- Production and Operations Management Society (POMS)
- PLOS One
- System Dynamics Review (SDR)

INFORMS 2022 Annual Meeting, Session Chair of the *Supply Chains* session (October 2022)

2022 International System Dynamics Conference, Session Chair of the *Economic Theory* session (July 2022)

POMS 32nd Annual Conference, Organizer and Session Chair of the *Simulation Models in Behavioral Operations* session within the *Behavioral Operations Management* track (April 2022)

Annual Meeting of the Academy of Management, reviewer of submitted papers for presentation (2022 conference)

International System Dynamics Society Conference, reviewer of submitted papers for presentation (2019, 2020, 2021, 2022 conferences)

POMS 31st Annual Conference, Co-Organizer of the *Trust and Fairness* session within the *Behavioral Operations Management* track (April 2021)

INFORMS 2021 Annual Meeting, Facilitator in the Supply Chain track (October 2021)

Developer of class offering for MIT's public facing OpenCourseWare system. Course number RES.15-004. (January 2020)

Selected
Presentations
& Conference
Proceedings

Paine, J. (June 2022). *Applying an Endogenized PID Controller Design to Speculative Bubble Formation*. Presentation of working paper the 2022 International System Dynamics Conference, Frankfurt, Germany

Paine, J. (April 2022). *Behaviorally Grounded Model-Based and Model Free Cost Reduction in a Simulated Multi-Echelon Supply Chain*. Presentation of working paper at self-organized and chaired session at the POMS 32nd Annual Conference, conducted virtually

Paine, J. (February 2022). *Modeling Dynamics Supply Chains with Endogenous Allocations and Market Clearing*. Poster Presentation at the SJDM 2021 Annual Conference, conducted virtually

Paine, J. (October 2021). *Algorithmic Interventions to Mitigate Inventory and Ordering Amplification in Multi-echelon Supply Chains: Model-Based vs Model-Free Approaches*. Presentation of working paper at the INFORMS 2021 Annual Meeting, conducted virtually and in Anaheim, CA

Paine, J. (July 2021). *Dynamic Supply Chains with Endogenous Allocation*. Presentation of working paper at the 39th International System Dynamics Conference, conducted virtually.

Paine, J. (May 2021). *Paucity and Plenty: A Dynamic Choice Model of a Bifurcated Food Supply Chain during COVID-19*. Presentation of working paper at the POMS 31st Annual Conference, conducted virtually.

Paine, J. (May 2021). *Mitigation of Inventory and Ordering Amplification in Multi-Echelon Supply Chains via Interpretable Algorithmic Intervention*. Presentation of working paper at the POMS 31st Annual Conference, conducted virtually.

Lopez, J., Paine, J. (May 2021). *A Feedback Approach to Explicitly Modeling the Evolution of Trust in Supply Chains*. Presentation of working paper at the POMS 31st Annual Conference, conducted virtually.

Paine, J. (July 2020). *Taming the Bull - Algorithmic Intervention to Mitigate Inventory and Ordering Amplification in Multi-Echelon Supply Chains*. Presentation of 2nd Year MIT Thesis Paper at the 2020 International System Dynamics Society Conference.

Keith, D., Paine, J. (June 2019). *The Perniciousness of Scale*. Presentation of working paper at the 2019 Industry Studies Association Annual Conference, Nashville, TN.

Keith, D., Taylor, L., Paine, J. (May 2019). *Organizational Poverty in Poverty Organizations*. Presentation of working paper at the 2019 Industry Studies Association Annual Conference, Nashville, TN.

Selected Presentations & Conference Proceedings (cont'd.)

Paine, J. (May 2019). *Taming the Bull - Mitigation of Inventory and Ordering Amplification in Multi-Echelon Supply Chains via Interpretable Machine Learning*. Presentation of research presented at The 38th System Dynamics PhD Colloquium, Worcester Polytechnic Institute, Worcester, MA.

Taylor, L and Paine, J (2019). *Organizational Poverty in Poverty Organizations*. Presentation of research presented at the System Dynamics Seminar Series, MIT Sloan School of Management, Cambridge, MA.

Paine, J. (2018). *What keeps nonprofits from investing in capacity?* Presentation of research presented at the 37th System Dynamics PhD Colloquium, MIT Sloan School of Management, Cambridge, MA.

Professional Experience

HanesBrands, Inc.

Winston-Salem, NC

Assistant Marketing Manager

Responsible for the product lifecycle management of the Playtex 18 Hour brand and Maidenform brands across channels of distribution, including online channels, valued more than \$105 million per year. Improved existing processes and consumer offerings via data driven methods. Created multiple reporting tools for monitoring service issue styles, performing inventory analytics, projected brand margin, and annual OPC estimations. Developed long-term SKU rationalization, pricing models, and multinational cross-category promotions. (June 2015-September 2017)

Inmar – Intelligent Commerce Networks

Winston Salem, NC

Continuous Improvement Manager

Led continuous improvement projects resulting more than \$220,000 of direct and indirect value under one year. Drove the cross-functional implementation of a Quality Management System while simultaneously ensuring long-term legal compliance in multiple industries. Performed a detailed economic and environmental analysis on implementing green initiatives designed to address gaps in the competitive landscape of the recall industry. (May 2013-June 2015).

Professional
Experience
(cont'd.)

GE-Hitachi Nuclear Energy

Wilmington, NC

Chemical Process Engineer

Completed the Edison Engineering Development Program, a rotational program incorporating varied technical and managerial experiences. Directly managed the fiscal requirements of nine technology development programs in cooperation with varied GE and Japanese affiliates. Developed software for the categorization of Items Relied on for Safety for a nuclear production facility. Created and executed a training system for over 800 employees to allow our site to pass a full Nuclear Regulatory Commission (NRC) recertification. Automated the transition to a new compliance platform, saving approximately 6 months of lead time. (June 2009-July 2011).

Activities
and
Societies

Society for Judgement and Decision Making (SJDM), member (2021), Production and Operations Management Society (POMS), member (2020), Industry Studies Association, member (2019), System Dynamics Society, member (2018), Institute for Operations Research and the Management Sciences (INFORMS), member (2017), Beta Gamma Sigma – Honor Society for the Study of Business, member (2014), The American Society for Quality (ASQ), member (2013), The American Society of Mechanical Engineers (ASTME), member (2011), The Order of the Engineer, member (2009), Tau Beta Pi – The Engineering Honor Society, member (2009), the American Nuclear Society (ANS), member 2007, The American Institute of Chemical Engineers (AIChE), member (2006), Phi Sigma Pi – National Co-Ed Honor Fraternity, Risk Management Board member (2006).

Interest include sailing, running, hiking, computer hardware, and reading.

References available upon request