

Emily C. Barbee

Ph.D. Candidate in Operations Management

Culverhouse College of Business

The University of Alabama

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Education

The University of Alabama

Tuscaloosa, AL

Ph.D. in Operations Management

August 2022 (expected)

- Dissertation: “Inventory and Pricing Optimization for Emerging Supply Chain Models”
- Advisor: Dr. Burcu B. Keskin

M.S. in Operations Management

May 2017

- Project: “Textile Specifications Optimization for Reduction of Scrap and Processing Time”

B.S. in Commerce and Business Administration

May 2017

- Major: Operations Management — Concentration: Supply Chain Management

Research Interests

Methodological: Stochastic Programming, Nonlinear Optimization, Discrete Choice, and Statistical Clustering

Application Areas: Supply Chain Management, Inventory Management, Revenue Management, Resale Supply Chains, Business Analytics, and Textile Production Optimization

Publications

Accepted Journal Publications

Keskin, B. B. and **E. Barbee**, “GreatDeal and NewChicken Merger: Designing an Omni-Channel Supply Chain,” *INFORMS Transactions on Education*, available online, March 2021.

Under Review

Barbee, E., B. B. Keskin, and A. W. Allaway, “Clustering Retail Stores for Inventory Transshipment,” major revision at *European Journal of Operational Research*, September 2021.

Keskin, B. B., **E. Barbee**, J. Prell, B. Dilkina, A. Ferber, M. Gore, R. Hilend, S. Griffis, and J. McDonald, “Quantitative Investigation of Wildlife Trafficking Supply Chains: A Review,” submitted to *Omega*, Sept. 2021.

Working Papers

Gore, M.L., Schwartz, L.R., Amponsah-Mensah, K., **Barbee, E.**, et al., “Voluntary, consensus-based geospatial data standards for the global illegal trade in wild fauna and flora,” to be submitted to *Nature Scientific Data*, October 2021.

Barbee, E. and B. B. Keskin, “Joint Inventory and Pricing Optimization for Resale Firms,” to be submitted to *Production & Operations Management*, November 2021.

Barbee, E., A. Ferber, B. B. Keskin, B. Dilkina, and M. Gore, “Network Interdiction for Illicit Wildlife Trafficking,” to be submitted to *IIEE Transactions*, January 2022.

Barbee, E., N. K. Freeman, and B. B. Keskin, "Multi-product Pricing with Rental and Resale," to be submitted to *Manufacturing & Service Operations Management*, May 2022.

Refereed Book Chapters

Lodree, E. J., D. Carter, and **E. Barbee** (2016). The donation collections routing problem. In: *Dynamics of Disasters-Key Concepts, Models, Algorithms, and Insights*. Springer, 159 - 189.

Conference Talks

Barbee, E. and B. B. Keskin. Inventory and Pricing Optimization for Resale Firms. 2021 INFORMS Annual Meeting.

Barbee, E. and B. B. Keskin. Inventory and Pricing Optimization for Resale Firms. 2021 POMS Annual Meeting.

Barbee, E., B. B. Keskin, and A.W. Allaway. Clustering Retail Stores for Inventory Transshipment. 2020 INFORMS Annual Meeting.

Barbee, E., B. B. Keskin, and A.W. Allaway. Clustering Retail Stores for Inventory Transshipment. 2020 TSL Conference (Cancelled for COVID-19).

Barbee, E., B. B. Keskin, and M. Yavuz. Cutting Stock and Lot-Sizing with Variable Machine Widths. 2020 POMS Annual Meeting (Cancelled for COVID-19).

Barbee, E., B. B. Keskin, and A.W. Allaway. Clustering Retail Stores for Inventory Transshipment. 2019 POMS Annual Meeting & 2019 INFORMS Annual Meeting.

Barbee, E. and B. B. Keskin. Omni-Channel Supply Chains with Unilateral Transshipments. 2018 INFORMS Annual Meeting.

Projects

Illicit Wildlife Trafficking

The University of Alabama

2020-2022

- Multidisciplinary research focusing on the implementation of Operations Research and Data Science methods to prevent and disrupt illicit trafficking activities. Project goals include three papers addressing major issues in wildlife trafficking including network detection and interdiction problems.

Simple Tire Supply Chain Improvements

The University of Alabama

2020-2021

- Mentored three students on projects to improve demand forecasting, service network coverage, fulfillment network structure, and sourcing decisions. Developed and implemented new algorithms for determining the fulfillment network for online sales. Presented findings and discussed project objectives with executives.

Operations Management Intern

PhiFer Incorporated

2015-2017

- **Textile Design Optimization:** Modeled and solved a nonlinear integer optimization problem for 500 SKUs which found textile specifications that minimized production time and scrap cost. Designed and built a program to allow design for manufacturing optimization of new products. Estimated annual savings: \$56,000.
- **Inventory Visualization Application:** Analyzed consumption and receipts data to build a tool that shows decision dependent representations of future inventory levels for 100 SKUs and updates daily.

- **Roll Cutting Accuracy Improvement:** Lead a cross-functional team in the design and implementation of a system that reduced scrap when cutting from master rolls of product by 60%.
- **Warehouse Location Optimization:** Optimized the locations of 3,000 products in a warehouse by usage and inventory level and reduced expected travel times for picking those products by 25%.

Teaching Experience

Instructor

- Computer Simulation (OM 420) Spring 2019
- Introduced students to simulation as a tool to understand and improve the performance of complex systems and processes. Applications included: production processes, inventory management, and operational activities. Software: Arena and Analytic Solver Platform.
 - Instructor Rating¹: 4.19/5.0 (37 Responses / 41 Enrolled)
- Introduction to Operations Management (OM 300) Summer 2018
- Introduced students to many popular topics in Operations Management: Operations Strategy, Project Management, Forecasting, Product Design, Sustainability, Quality, Statistical Process Control, Transportation Models, Inventory Management, Supply Chain Management, Lean Operations, and Linear Programming
 - Instructor Rating: 4.62/5.0 (26 Responses / 35 Enrolled)

Teaching Assistant

- OM 524: Manufacturing Scheduling and Control Systems Spring 2020
- OM 423: Inventory Management Spring 2020
- OM 522: Operations Scheduling Problems Fall 2019
- OM 523: Inventory Management Fall 2018
- OM 517: Supply-Chain Management (Executive MBA) Fall 2018
- OM 506: Business Spreadsheet Analytics (Executive MBA) Summer 2018
- OM 516: Operations Management (Executive MBA) Summer 2018
- OM 300: Introduction to Operations Management Summer 2017

Relevant Coursework

<u>Mathematics and Statistics</u>	<u>OR Methods</u>	<u>Applications</u>
Intro to Real Analysis I & II	Data Science	Inventory Theory
Stochastic Processes	Linear Programming	Game Theory
Numerical Linear Algebra	Nonlinear Programming	Supply Chain Management
Statistical Quality Control	Integer Programming	Production Management Models
Design of Experiments	Stochastic Decision Models	Manufacturing Control Systems
Mathematical Statistics I	Computer Simulation	Production Scheduling

Honors, Awards, and Grants

Graduate

- Graduate Council Fellowship (\$20,000 award) 2021
- Outstanding Operations Management Ph.D. Student 2020, 2021

¹Average of Instructor Related Questions

Summer Excellence in Research Grant (\$10,000)	2020
Summer Excellence in Research Grant (\$5,000)	2019
Outstanding Operations Management Graduate Student Instructor	2018
Graduate Council Fellowship (\$15,000 award)	2017
Fellowship Assistance Partnership (\$8,000 award)	2017

Undergraduate

Austin Cup Nominee (best student in ISM department based on scholastic performance and leadership)	2017
Outstanding Senior in Operations Management Award	2016
Outstanding Junior in Operations Management Award	2015
Presidential Scholarship	2013

Service and Leadership

Professional Service

Session Chair INFORMS Annual Meeting	October 2021
Session Chair POMS Annual Meeting	May 2021
President, UA INFORMS Student Chapter	Spring 2019 - Spring 2020
Vice-President, UA INFORMS Student Chapter	Spring 2018 - Spring 2019
Secretary, UA INFORMS Student Chapter	Spring 2017 - Spring 2018

Editorial Service

OMEGA	Reviewer (Since 2019)
Computers & Operations Research	Ad-hoc Reviewer
European Journal of Operational Research	Ad-hoc Reviewer

University of Alabama

Graduate Student Housing Committee Chair	Fall 2019 - Spring 2020
Graduate Student Association Departmental Delegate	Fall 2017 - Spring 2020
Undergraduate Research and Creative Activity Conference Judge	Spring 2019
Alpha Kappa Psi Finance Team	January 2015 - May 2015
Alpha Kappa Psi Housing Committee Chair	August 2014 - January 2015

Computer Skills

Programming Languages: Python (Pandas, Numpy, Scipy, Scikit Learn), R, C++, Gurobi, Maple, Matlab, L^AT_EX, CPLEX, VBA, Lingo

Other Software: Git, Jupyter Notebooks, RStudio, JMP, Minitab, SAP, Arena, Analytic Solver Platform, Microsoft Visual Studio, Microsoft Office

Industry Experience

Phifer Incorporated

Tuscaloosa, AL

Operations Management Intern

February 2015 - May 2017