

MOUSTAPHA DIABY

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University of Connecticut
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EDUCATION

- Ph.D. Management Science/Operations Research
 University at Buffalo – The State University of New York
- M.S. Industrial Engineering/Operations Research
 University at Buffalo – The State University of New York
- B.S. Chemical Engineering
 University at Buffalo – The State University of New York

RESEARCH

Interests

- Mathematical Programming
- Manufacturing Systems Modeling and Analysis
- Supply Chain Management
- Logistics and Distribution Management
- Project Management

Refereed Book

Diaby, M. and M.H. Karwan, *Advances in combinatorial optimization: Polynomial-sized linear programs for the traveling salesman and other hard combinatorial optimization problems*, World Scientific Publishing (April 2016; Singapore).

Refereed Journal Publications

Diaby, M., "On Polynomial-sized Linear Programs for the TSP: Side-stepping the TSP Polytope Barriers via Extended Formulations of the Assignment Polytope." (In review).

Diaby, M., "A $\Theta(m^9)$ Ternary Minimum-Cost Network Flow LP Model of the Assignment Problem Polytope, with Applications to *Hard* Combinatorial Optimization Problems," *Logistics* 10:63 (2026), <https://doi.org/10.3390/logistics10030063>

Diaby, M., M.H. Karwan, and L. Sun, "On modelling hard combinatorial optimisation problems as linear programs: Refutations of the 'unconditional impossibility' claims," *International Journal of Operational Research* 40:2 (2021), pp. 261-278.

- Sun, L., M.H. Karwan, and M. Diaby, "The indefinite-period traveling salesman problem" *European Journal of Operational Research* 270:3 (November 2018), pp. 1171-1181.
- Diaby, M. and M.H. Karwan, "Limits to the scope of applicability of *extended formulations*," *International Journal of Mathematics in Operational Research* 10:1 (2017).
- Cao, Y., A.L. Nsakanda, M. Diaby, and M.J. Armstrong, "Rewards-supply planning under option contracts in managing coalition loyalty programs," *International Journal of Production Research* 53:22 (2015), pp. 6772-6786.
- Cao, Y., A.L. Nsakanda, and M. Diaby, "Planning the supply of rewards with cooperative promotion considerations in coalition loyalty programmes management," *Journal of the Operational Research Society* (2014), pp. 1-15.
- Diaby, M., J.M. Cruz, and A.L. Nsakanda, "Shortening cycle times in multi-product, capacitated production environments through quality level improvements and setup reduction," *European Journal of Operational Research* 228 (2013), pp. 526-535.
- Diaby, M., "Editorial: Solving large-scale and stochastic linear programs," *International Journal of Mathematics in Operational Research* 4:4 (2012), pp. 317-318.
- Cao, Y., Nsakanda, A. L., M. Diaby, "A stochastic linear programming modeling and solution approach for planning the supply of rewards in loyalty rewards programs," *International Journal of Mathematics in Operational Research* 4:4 (2012), pp. 400-421.
- Diaby, M., J.M. Cruz, and A.L. Nsakanda, "Project crashing in the presence of general non-linear activity time reduction costs," *International Journal of Operational Research* 12:3, (2011) pp.318–332.
- Nsakanda, A.L., M. Diaby, and Y. Cao, "A Model for Predicting Redemption and Liability in the Loyalty Rewards Industry," *Information System Frontiers* 13 (2011), pp. 707–719.
- Nsakanda, A.L., M. Diaby, Y. Cao, "Solving Capacitated Part-Routing Problems With Setup Times and Costs: A Dantzig-Wolfe Decomposition Approach," *International Transactions in Operations Research* 18 (2010), pp.71-86.
- Diaby, M., "Linear Programming Formulation of the Set Partitioning Problem," *International Journal of Operational Research* 8:4 (August 2010) pp. 399-427.
- Nsakanda, A.L., M. Diaby, and W.L. Price, "A Price-Directed Decomposition Approach for Solving Large-Scale Capacitated Part-Routing Problems," *International Journal of Production Research* 48:14 (July 15, 2010), pp. 4273-4295.
- Diaby, M., "Linear Programming Formulation of the Vertex Coloring Problem," *International Journal of Mathematics in Operational Research* 2:3 (May 2010) pp. 259- 289.
- Nsakanda, A.L., W.L. Price, M. Diaby, and M. Gravel, "Ensuring Population Diversity in Genetic Algorithms," *European Journal of Operational Research* 178:2 (April 2007) pp. 634-638.

- Diaby, M., "The Traveling Salesman Problem: A Linear Programming Formulation," *WSEAS Transactions on Mathematics* 6:6 (June 2007) pp. 745-754.
- Nsakanda, A.L., M. Diaby, and W.L. Price, "A Hybrid Genetic Algorithm for Solving Large-Scale Capacitated Cell Formation Problems With Multiple Routings," *European Journal of Operational Research* 171:3 (June 2006) pp. 1051-1070.
- Anteneh, A., M. Diaby, and S.K. Nair, "Inventory rationing via drop-shipping in Internet retailing: A Sensitivity Analysis," *European Journal of Operational Research* 171:1 (May 2006) pp. 135-152.
- Diaby, M., and A.L. Nsakanda, "Large-Scale Capacitated Part-Routing in the Presence of Process and Routing Flexibilities and Setup Costs," *Journal of the Operational Research Society* 57:9 (Sept. 2006) pp. 1100-1112.
- Campbell, G.L., and M. Diaby, "Development and Evaluation of an Assignment Heuristic for Allocating Cross-Trained Workers," *European Journal of Operational Research* 138:1 (April 2002) pp. 9-20.
- Diaby, M., "Integrated Batch Size and Setup Reduction Decisions in Multi-Product, Dynamic Manufacturing Environments," *International Journal of Production Economics* 67:3 (October 2000) pp. 219-233.
- Padillo, J.M., and M. Diaby, "A Multiple-Criteria Decision Methodology for the Make-or-Buy Problem," *International Journal of Production Research* 37:4 (Fall 1999) pp. 3203-3229.
- Diaby, M., and J.M. Martel, "Preference Structure Modelling for Multi-Objective Decision-Making: A Goal Programming Approach," *Multi-Criteria Decision Analysis* 6 (1997).
- Diaby, M., "Optimal Setup Time Reduction for a Single Product with Dynamic Demands," *European Journal of Operational Research* 85:3 (Fall 1995).
- Martel, A., M. Diaby, and F.F. Bector, "Multiple Items Procurement Under Stochastic Nonstationary Demands," *European Journal of Operational Research* 87 (Fall 1995) pp. 74-92.
- Ramesh, R., and M. Diaby, "The Distribution Problem With Carrier Service: A Dual Based Penalty Approach," *Journal on Computing* 7:1 (Winter 1995) pp. 24-35.
- Diaby, M., "Managing Technology and Innovation," *Operations Management Review* 10:3 (October 1994).
- Diaby, M., "Efficient Post-Optimization Analysis for the Dynamic Lot-Sizing Problem," *European Journal of Operational Research* 68:1 (July 1993).
- Diaby, M., "Implicit Enumeration for the Pure Integer 0/1 Minimax Programming Problem," *Operations Research* 41:6 (Nov.-Dec. 1993).

- Diaby, M., and A. Martel, "Dynamic Lot-Sizing for Multi-Echelon Distribution Systems With Purchasing and Transportation Price Discounts," *Operations Research* 41:1 (Jan. 1993) pp. 48-59.
- Diaby, M., H.C. Bahl, M.H. Karwan, and S. Zionts, "A Lagrangean Relaxation Approach for Very-Large-Scale Capacitated Lot-Sizing," *Management Science* 38:9 (Sept. 1992) pp. 1329-1340.
- Diaby, M., H.C. Bahl, M.H. Karwan, and S. Zionts, "Capacitated Lot-Sizing and Scheduling by Lagrangean Relaxation," *European Journal of Operational Research* 59:3 (June 1992) pp. 444-458.
- Diaby, M., "Successive Linear Approximation Procedure for Generalized Fixed-Charge Transportation Problems," *Journal of the Operational Research Society* 42:11 (1991) pp. 991-1001.

Refereed Proceedings Publications

- Diaby, M. and A.L. Nsakanda, "Dynamic Lot-sizing in a Reverse Logistics Environment", *Proceedings of the North-East Decision Sciences Annual Conference*. (March 27, 2014 - March 29, 2014)
- Cao, Y., A.L. Nsakanda, and M. Diaby, "Planning the Supply of Rewards in Loyalty Reward Programs – A Supply Chain Perspective," *Proceedings of the 2010 DSI Annual Conference*, San Diego, California, November 20-23, 2010.
- Cao, Y., A.L. Nsakanda, and M. Diaby, "Aggregate Planning of rewards-supply in loyalty rewards programs," *Proceedings of the 2010 ASAC Conference*, Regina, Canada, May 22-25, 2010.
- Cao, Y., A.L. Nsakanda, and M. Diaby, "Coping with the Planning of Reward Supply in Loyalty Reward Programs – A Mathematical Model," *Proceedings of the POMS 21st Annual Conference*, Vancouver, Canada, May 7-10, 2010.
- Nsakanda, A.L., M. Diaby, and Y. Cao, "A Predictive Model of Redemption and Liability in the Loyalty Rewards Industry," *Proceedings of the Hawaii International Conference on System Science* 43, Honolulu, Hawaii, January 2010.
- Diaby, M., and A.L. Nsakanda, "Coping With Revenue Recognition in the Loyalty Reward Program Industry: A Stochastic Modeling Approach," *Proceedings of the 2008 American Conference on Applied Mathematics*, Boston, MA, March 22-24, 2008.
- Cruz, J.M., Diaby, M., and A.L. Nsakanda, "Geometric Programming Model of the Lot-Scheduling Problem With Investments in Setup Reductions and Process Improvements," *Proceedings of the 2008 American Conference on Applied Mathematics*, Boston, MA, March 22-24, 2008.
- Nsakanda, A.L., M. Diaby, and W.L. Price, "An Empirical Comparison of Cross-Over Operators for the Manufacturing Cell Formation Problem," *Proceedings of the 2007 DSI Annual Conference*, Phoenix, AZ, Nov. 17-20, 2007.

- Diaby, M., "A Linear Programming Formulation of the Traveling Salesman Problem," *Proceedings of the 11th WSEAS International Conference on Applied Mathematics* (Dallas, TX, March 21-23, 2007).
- Diaby, M., "On the Equality of Complexity Classes P and NP: Linear Programming Formulation of the Quadratic Assignment Problem," *Proceedings of the International Multi-conference of Engineers and Computer Scientists* (Hong Kong, June 20-22, 2006), pp. 774-779.
- Nsakanda, A.L., M. Turcotte, and M. Diaby, "Air Cargo Operations Evaluation and Analysis Through Simulation," *Proceedings of the 2004 Winter Simulation Conference* (2004).
- Nsakanda, A.L., and M. Diaby, "Selecting Production Plans in Cellular Manufacturing Systems with Setup Costs: Formulation and Solution Methodology," *Proceedings of the 2004 Decision Science Institute Conference* (October 2004; Boston, MA).
- Padillo, J.M., and M. Diaby, "A Multiple-Criteria Decision Methodology for Time- Dependent Problems in Operations/Technology Management," *Proceedings of the 8th Annual Industrial Engineering Research Conference* (May 1999, Phoenix, AZ).
- Diaby, M., "Shortening Manufacturing Cycle Times Through Setup Reductions and Quality Level Improvements," *Proceedings of the ASME* (November 1997, Dallas, Texas).
- Diaby, M., and J.M. Martel, "A Goal Programming Approach to Modeling the Decision Maker's Preferences for Multi-Objective Decision Making," *Proceedings of the DSI National Conference* (1992, San Francisco, CA) pp. 1085-1087.
- Diaby, M., and A. Martel, "Joint Replenishment for Multi-Echelon Physical Distribution Systems with Purchasing and Transportation Price Discounts," *Proceedings of the DSI National Conference* (1991, Miami, FL) pp. 1329-1332.
- Martel, A., and M. Diaby, and F. Bector, "Efficient Approximations for Dynamic, Nonstationary, Lot-Sizing Problems," *Proceedings of the Western DSI Conference* (1991, San Francisco, CA).
- Diaby, M., "Sensitivity Analysis for the Dynamic Lot-Sizing Problem," *Proceedings of the SE - TIMS Conference* (1990, Myrtle Beach, SC) pp. 320-323.

Book Chapter

- Diaby, M., "Linear programming formulation of the multi-depot multiple traveling salesman problem with differentiated travel costs." In D. Davendra (ed.), *Traveling Salesman Problem, Theory and Applications* (2010, InTech, New York, NY) pp. 257-282.

Conference Presentations

Numerous presentations at conferences of professional organizations such as ASAC, CORS, DSI, EURO, IFORS, IMECS, INFORMS, OMA, SIAM, and WSEAS.

Grants

- University of Connecticut: \$5,000; Individual; 2023;
- University of Connecticut: \$5,000; Individual; 2022;
- University of Connecticut: \$6,000; Individual; 2021;
- University of Connecticut: \$5,000; Individual; 2019;
- University of Connecticut: \$22,000; Individual; 2018;
- University of Connecticut: \$20,000; Individual; 2017;
- University of Connecticut: \$20,000; Individual; 2016;
- University of Connecticut: \$15,000; Individual; 2015;
- University of Connecticut: \$10,000; Individual; 2013;
- University of Connecticut: \$12,500; Individual; 2010;
- University of Connecticut: \$15,000; Individual; 1994;
- Arizona State University: \$10,000; Individual; 1993;
- NSERC (Canada): \$30,000; Individual; 1988-1990;
- *NRC (Canada)*: \$300,000; Research Group; 1988-1990.

TEACHING

Courses developed and taught:

- “Large-Scale Optimization” (Ph.D.)
- “Special Topics in Mathematical Programming” (Ph.D.)
- “Doctoral Seminar in Production and Operations Management” (Ph.D.)
- “Facilities Design and Manufacturing Technology” (Ph.D. & MBA/MS)
- “Business Decision Modeling” (MS/MBA)
- “Management of International Development Projects” (MBA/MS)
- “Introduction to Managerial Statistics” (MBA)
- “Introduction to Production and Operations Management” (MBA)
- “Introduction to Production and Operations Management” (MBA; Online)
- “Introduction to Production and Operations Management” (Undergraduate)
- “Introduction to Manufacturing Systems” (Undergraduate)
- “Introduction to Operations Research” (Undergraduate)
- “Introduction to Probability and Statistics” (Undergraduate)
- “Inventory and Distribution Management” (Undergraduate)
- “Industrial Quality Control” (Undergraduate)
- “Industrial Quality Control” (Undergraduate; Online)

SERVICE ACTIVITIES

University/School/Department Committees

- Member, University Graduate Faculty Council
- University McNair Scholars Faculty Mentor
- Speaker, University of Connecticut AAUP Representatives Assembly
- Chair, University of Connecticut AAUP Benefits Subcommittee
- Member, University of Connecticut AAUP Governance Subcommittee
- Member, University of Connecticut Contract Committee
- Member, University of Connecticut AAUP Representatives Assembly
- Vice-President, SBA Faculty Council for the Beta, Gamma, Sigma Honor Society
- Member, SBA Diversity Initiative Committee
- Treasurer, SBA Faculty Council for the Beta, Gamma, Sigma Honor Society
- Department Faculty Evaluation Committee
- Department Merit Review Committee
- Department Ph.D. Committee
- MEM Advisory Board
- MEM Curriculum Development Committee
- Department Honors Committee
- Co-Director, Business/Engineering Post-Baccalaureate Degree Program Development
- SBA Faculty Development Committee
- SBA Dialog Committee
- Department Faculty Recruiting Committee
- Department Ph.D. Recruiting Committee
- Department Promotion and Tenure Committee
- MBA-Track-in-OPM Committee
- MBA-Core Committee
- Undergraduate Strategic Planning Committee
- Department Graduate Student Recruiting Committee
- Department Grant Allocation Committee
- Graduate Curriculum Committee

Professional Societies

- Plenary Speaker: American Conference on Applied Mathematics, Harvard Business School, Boston, Massachusetts.
- “Feature Speaker:” First Atlantic Operational Research Symposium, Halifax, NS, Canada.
- Chair, INFORMS Student Affairs Committee.
- Chair, ORSA Student Affairs Committee.
- Chair, Local Arrangements, INFORMS Annual Meeting, Phoenix, Arizona.
- Member, ORSA Nicholson Prize Committee.
- Member, ORSA Student Affairs Committee.
- Ad Hoc Session Chair, ORSA/TIMS, TIMS, DSI, *INFORMS*, IFORS, OMA

Editorial Services

- Guest Editor
 - Special Issue of *Logistics* on “*Intelligent Routing and Scheduling for Green Logistics*” (Forthcoming).
 - Special Issue of *International Journal of Mathematics in Operational Research* on “*Recent Developments in Solving Large-Scale Linear Programming Problems.*”
- Associate Editor, *Journal of Industrial Engineering*.
- Guest Associate Editor, Special Issue of *Annals of Operations Research* on “*Interface of OR and IS.*”
- Editorial Board Member:
 - *Logistics (MDPI)*.
 - *Production and Operations Management (MDPI)*.
 - *International Journal of Mathematics and Statistics*.
 - *The Scientific World Journal*.
 - *International Journal of Quality Science*.
- NSF Review Panel Member for “*Design, Manufacture, and Industrial Innovation.*”
- Ad Hoc Reviewer:
 - *Annals of Operations Research*
 - *Applied Mathematical Modelling*
 - *Computers and Industrial Engineering*
 - *Computers and Operations Research*

- *DEA Journal*
- *Decision Sciences Journal*
- *Discrete Optimization*
- *Engineering Applications of Artificial Intelligence*
- *European Journal of Operational Research*
- *Expert Systems With Applications*
- *IIE Transactions*
- *INFOR*
- *International Journal of Computer Mathematics*
- *International Journal of Operational Research*
- *International Journal of Production Economics*
- *International Journal of Production Research*
- *Journal of Industrial Engineering*
- *Journal of Scheduling*
- *Journal of the Operational Research Society*
- *Kuwait Journal of Science and Engineering*
- *Logistics*
- *Management Science*
- *Mathematical Problems in Engineering*
- *Mathematical Programming*
- *Multi-Criteria Decision Analysis*
- *Naval Research Logistics*
- *Networks and Spatial Economics*
- *NSERC (Canada)*
- *NSF*
- *Omega*
- *Operations Research Transaction Journal for Engineering and Industry*
- *Transportation Science*
- *World Scientific Journal*
- *WSEAS Transactions on Mathematics*