

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

Research Interests

- Mathematical Programming
- Manufacturing Systems Modeling and Analysis
- Operations Management
- Logistics and Distribution Management

Refereed Book

Diaby, M. and M.H. Karwan, "Polynomial-sized linear programs for the traveling salesman and other hard combinatorial optimization problems." (In review)

Refereed Journal Publications

Diaby, M. and M.H. Karwan, "On *ill-definition* and degeneracy conditions for *Extended Formulations*." (In review).

Diaby, M. and A.L. Nsakanda, "Single-item lot-sizing and outsourcing in a dynamic reverse logistics manufacturing environment." (In review).

Cao, Y., A.L. Nsakanda, M. Diaby, and M.J. Armstrong, "Rewards-supply planning under option contracts in managing coalition loyalty programs." (In review).

Cao Y., A.L. Nsakanda, M. Armstrong, and M. Diaby, "Aggregate Rewards-Supply Planning with Cooperative Promotion in the Management of Loyalty Reward Programs." (In review).

- Cao, Y., A.L. Nsakanda, and M. Diaby, "Modelling and Planning the Supply of Rewards with Stochastic Demands in Coalition Loyalty Rewards Programs," (In review).
- 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.
- 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. Boctor, "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," ORSA 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

- 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. Boctor, "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

More than sixty (60) presentations at conferences of professional organizations such as ASAC, CORS, DSI, IFORS, IMECS, INFORMS, OMA, SIAM, and WSEAS.

Grants

- NSERC (Canada): \$30,000; Individual; 1987-1989;
- *NRC Canada*: \$300,000; Research Group; 1988-1990;
- Arizona State University: \$10,000; Individual; 1993;
- University of Connecticut: \$15,000; Individual; 1994;
- University of Connecticut: \$12,500; Individual; 2010;
- University of Connecticut: \$10,000; Individual; 2013.

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)
- “Management of International Development Projects” (MBA/MS)
- “Introduction to Managerial Statistics” (MBA)
- “Introduction to Production and Operations Management” (MBA; Undergraduate)
- “Introduction to Manufacturing Systems” (Undergraduate)
- “Introduction to Operations Research” (Undergraduate)
- “Introduction to Probability and Statistics” (Undergraduate)
- “Inventory and Distribution Management” (Undergraduate)
- “Quality Management and Control” (Undergraduate)

SERVICE ACTIVITIES

School/Department Committees

- SBA Faculty Advisor, Beta, Gamma, Sigma Honor Society
- Department Ph.D. Committee
- MEM Curriculum Development Committee
- Department Honors Committee
- Co-Chair, Business/Engineering Post-Baccalaureate Degree Program
- SBA Faculty Development Committee
- SBA Dialog Committee
- Department 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, MA, March 2008
- “Feature Speaker:” First Atlantic Operational Research Symposium, Halifax, NS, 1995
- Chair, INFORMS Student Affairs Committee, 1995-1997

- Chair, ORSA Student Affairs Committee, 1994-1995
- Chair, Local Arrangements, INFORMS 1993 Annual Meeting, Phoenix, Arizona
- Member, ORSA Nicholson Prize Committee, 1993-1997
- Member, ORSA Student Affairs Committee, 1993-1994
- Ad Hoc Session Chair, ORSA/TIMS, TIMS, DSI, *INFORMS*, IFORS, OMA

Editorial Services

- Guest Editor, ***International Journal of Mathematics in Operational Research***: Special Issue on *Recent Developments in Solving Large-Scale Linear Programming Problems*.
- Associate Editor: ***Journal of Industrial Engineering***
- Guest Associate Editor, ***Annals of Operations Research***: Special Issue on the *Interface of OR and IS*.
- Editorial Board Member, ***International Journal of Mathematics and Statistics***.
- Editorial Board Member, ***The Scientific World Journal***.
- Editorial Board Member, ***International Journal of Mathematics in Operational Research***.
- Editorial Board Member, ***International Journal of Quality Science***.
- Member, ***NSF Review Panel for Design, Manufacture, and Industrial Innovation***.
- Ad Hoc Reviewer for: ***Annals of Operations Research, DEA Journal, Decision Sciences Journal, European Journal of Operational Research, IIE Transactions, INFOR, International Journal of Computer Mathematics, International Journal of Production Economics, International Journal of Production Research, Journal of Scheduling, Management Science, Mathematical Programming, Naval Research Logistics, Networks and Spatial Economics, NSERC (Canada), NSF, Operations Research, Transaction Journal for Engineering and Industry, Transportation Science, and others***.