Rahma Lahyani

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Degrees

2015	**Qualification for the Rank of Associate Professor** (Maître de Conférence) *Section 61*: Automatic *Section 27*: Computer Engineering Ministry of Higher Education and Scientific Research, France
2014	**Ph.D.**, École Centrale de Lille, Lille, France *Major*: Quantitative Methods, Industrial Engineering *Supervisors*: Frédéric Semet and Mahdi Khemakhem *Team*: Optimization of Logistics Systems (OSL) *Laboratory*: Automation, Computer Engineering, Image and Signal Processing (LAGIS) *Defended on*: June 13th, 2014

Positions

08/2015−	Assistant Professor of Operations Management & Quantitative Methods	CoB, Alfaisal University
12/2014−07/2015	Post doctoral fellow	CIRRELT, Laval University
07/2014−11/2014	Post doctoral fellow	LAGIS, École Centrale de Lille
01/2011−06/2014	Ph.D. student (CNRS)	LAGIS, École Centrale de Lille
09/2013−08/2014	Instructor of Quantitative Methods	École Centrale de Lille, Mathematics-Computer Science department
09/2012−08/2013	Instructor of Quantitative Methods	École Centrale de Lille, Mathematics-Computer Science department

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Research Interest

My main research activities are in the field of *logistics* and supply chain. They encompass multi-attribute and challenging problems arising in the *supply chain management* from strategic to operational decisions, focusing on yielding efficient and effective transportation and distribution systems. They include mathematical modeling and developing metaheuristics and exact solution algorithms to solve academic and rich practical problems. Recently, we have solved a real-world logistics application arising in the collection of olive oil in Tunisia. A part of my research is dedicated to experimental design and performance analysis. For more details, please see the list of publications.

Publications

International ISI Journals

1. A. Abo Al Haija, **R. Lahyani,** 2023. Dynamic interactions of actual stock returns with forecasted stock returns and investors' risk aversion: empirical evidence interplaying the impact of Covid-19 pandemic, Review of Quantitative Finance and Accounting, pp: 1-21.
   Impact Factor: 1.7
   SJR: Q1
   ABS-RI journal list 2021: 3

2. A Louati, **R. Lahyani,** A Aldaej, A Aldumaykhi, S Otai, 2022. Price Forecasting For Real Estate Using Machine Learning: A Case Study On Riyadh City, Concurrency and Computation: Practice and Experience, 34(6), e6748.
   Impact Factor: 1.5
   SJR: Q3

3. A Louati, **R. Lahyani,** A Aldaej, R Mellouli, M Nusir, 2021. Mixed Integer Linear Programming Models to Solve a Real-Life Vehicle Routing Problem with Pickup and Delivery, Applied Sciences 11(20), 9551.
   5-years Impact Factor: 2.7
   SJR: Q2

4. **R. Lahyani,** K. Chebil, M. Khemakhem, L. Coelho, 2019. *Matheuristics for solving the Multiple Knapsack Problem with Setup*, Computers & Industrial Engineering. 129, pp: 76-89.
   Impact Factor: 5.4
   SJR: Q1
   ABS-RI journal list 2016: B

5. **R. Lahyani,** A.L. Gouguenheim, L. Coelho, 2019. *A hybrid adaptive large neighbourhood search for multi-depot open vehicle routing problems*, International Journal of Production Research. 57(22)
   Impact Factor: 8.5
   SJR: Q1
   ABDC rating 2017: A
   ABS-RI journal list: B

6. **R. Lahyani,** L. Coelho, J. Renaud, 2018. *Alternative Formulations and Improved Bounds for the Multi-Depot Fleet Size and Mix Vehicle Routing Problem*, Operations Research Spectrum, 40(1), pp: 125-157.
   5-years-Impact Factor: 2.2
   SJR 2017: Q1
   ABDC rating 2017: A
   ABS-RI journal list : B

7. T. Chabot, **R. Lahyani,** L. Coelho, J. Renaud, 2017. *Order Picking Problems under Weight, Fragility and Category Constraints*, International Journal of Production Research, 55(21), pp: 6361-6379.
   Impact Factor: 8.5
   SJR: Q1
   ABDC rating 2017: A
   ABS-RI journal list: B

8. **R. Lahyani,** M. Khemakhem, F. Semet, 2017. *A unified matheuristic for solving multi-constrained traveling salesman problems with profits*, EURO Journal on Computational Optimization, 5(3), pp:393-422.
Impact Factor: 1.4
SJR: Q1

9. **R. Lahyani, M. Khemakhem, F. Semet**, 2015. *Rich vehicle routing problems: From a taxonomy to a definition*, **The Lead Article** in European Journal of Operational Research, 241(1), pp:1-14. Ranked **13th on the top 25** for EJOR, October to December 2014. **5-years-Impact Factor**: 5.33
SJR: Q1
ABDC rating 2017: A
ABS-RI journal list : A

10. **R. Lahyani,** L. C. Coelho, M. Khemakhem, G. Laporte, F. Semet, 2015. *A multi-compartment vehicle routing problem arising in the collection of olive oil in Tunisia*, **The Lead Article** in OMEGA, 51, pp:1-10.
Impact Factor 2019:7.1
SJR: Q1
ABDC rating 2017: A
ABS-RI journal list: A*

11. **R. Lahyani**, 2014. *Unified matheuristic for solving rich vehicle routing problems*, 4OR-A Quarterly Journal of Operations Research, 13-2:223-224.
5-years Impact Factor: 2.1
SJR: Q2, H index(41)
ABS-RI journal list: C

Book Chapters

12. **R. Lahyani, F. Semet, B. Trouillet**, 2014. *Vehicle routing problems with scheduling constraints*, in Metaheuristics for production scheduling, P. Siarry, B. Jarboui, J. Teghem, editor, ISTE-John Wiley. ISBN: 978-1-84821-497-2.

13. **R. Lahyani, F. Semet, B. Trouillet**, 2013. *Problèmes d'élaboration de tournées avec contraintes d'ordonnancement,*dans Métaheuristiques pour l'ordonnancement de la production, P. Siarry, B. Jarboui, J. Teghem, éditeurs, Hermès Sciences/ISTE-John Wiley, ISBN : 978-2-7462-3926-5.

International Conferences with Proceedings

14. **A. Louati, F. Masmoudi, R. Lahyani**, 2022. Traffic Disturbance Mining and Feedforward Neural Network to enhance the Immune Network Control Performance, Seventh International Congress on Information and Communication Technology, ICICT 2022, Springer Nature, Volume 1, pp: 99-106.

15. **R. Lahyani, F. AlSaad, L. Merdad, M. Alzamel**, 2021. Supply chain resilience vs. COVID-19 disruptions during the second wave. Elsevier proceedings, Procedia CIRP, 103, pp: 42-48.

16. **A. Alajmi, N. Adlan, R. Lahyani**, 2021. Assessment of Supply Chain Management Resilience within Saudi Medical Laboratories during Covid-19 Pandemic. Elsevier proceedings, Procedia CIRP, 103, pp: 32-36.

17. **S. Ben Ismail, R. Lahyani, H. Chabchoub**, 2018. For solving the multi-depot fleet size and mix open vehicle routing problem, Proceedings of the 7th International Conference on metaheuristics and Nature Inspired computing, Morocco, sciencesconf.org:meta2018:213400, pp: 419-425.

18. **T. Chabot, R. Lahyani, L. C. Coelho, J. Renaud**, 2017. Alternative heuristics for solving multi-constrained order picking problem, Proceeding of the 9th IEEE-GCC Conference, Bahrain.

19. **R. Lahyani, M. Khemakhem, F. Semet**, 2013. For solving rich orienteering problems, Tristan VIII, Chile.

20. **R. Lahyani, M. Khemakhem, H. Chabchoub, F. Semet**, 2013. *Heuristics for rich profitable tour problems*, Proceedings of the 5th International Conference on Modeling, Simulation and Applied Optimization, Tunisia, IEEE International Conference, ISBN 978-1-4673-5812-5.

21. **R. Lahyani, M. Khemakhem, F. Semet, H. Chabchoub**, 2012. *Taxonomy for multi-attribute vehicle routing problems*, Proceedings of the 1st International Conference on Logistics Operations Management, IEEE International Conference-GOL'12, France.

22. **R. Lahyani, M. Khemakhem, H. Chabchoub, F. Semet**, 2011. *Design factors analysis for instances of rich vehicle routing problems*, **Best Student Paper** in Proceedings of the 4th International Conference on Logistics 2011, Tunisia, IEEE International Conference, pp:209-215, ISBN 978-1-4577-0322-5.

23. **R. Lahyani, M. Khemakhem, H. Chabchoub, F. Semet**, 2011. *Rich vehicle routing problem: model and experimental design analysis*, Proceedings of the International Conference on Industrial Engineering and Systems Management, ENIM&I4e2, France, pp:1300-1310, ISBN 978-2-9600532-3-4.

Conferences

24. **R. Lahyani**, 2021. An adaptive large neighborhood search for solving the multi-depot fleet size and mix open vehicle routing problem. IFORS 2021, South Korea.

25. **R. Lahyani**, 2019. An adaptive large neighborhood search for solving a rich vehicle routing problem. TORS 2019, Zarzis, Tunisia.

26. **R. Lahyani, L. C. Coelho, J. Renaud**, 2017. The Multi-Depot Fleet Size and Mix Vehicle Routing Problem: Formulations and Branch-and-Cut Algorithms. MOPGP 2017, Metz, France.

27. **T. Chabot, R. Lahyani, L. C. Coelho, J. Renaud**, 2016. Order picking under weight, fragility and category constraints, 17 éme conférence de la société Française de Recherche Opérationnelle et Aide à la Décision- ROADEF 16, France.

28. **R. Lahyani, L. C. Coelho, J. Renaud**, 2015. *Formulations and exact algorithms for the Multi-depot Fleet Size and Mix Vehicle Routing Problem*, VeRoLog 2015, Austria.

29. **R. Lahyani, L. C. Coelho, J. Renaud**, 2015. *Formulations and exact algorithms for the Multi-depot Fleet Size and Mix Vehicle Routing Problem*, CORS/INFORMS 2015, Canada.

30. **R. Lahyani, L. C. Coelho, J. Renaud**, 2015. *A Multi-Compartment Vehicle Routing Problem Arising in the Collection of Olive Oil in Tunisia*, TORS 2015, Tunisia.

31. **R. Lahyani, M. Khemakhem, F. Semet**, 2014. *A unified mathheuristic framework for multi-constraint traveling salesman problems with profits*, VeRoLog 2014, Norway.

32. **R. Lahyani, M. Khemakhem, F. Semet**, 2014. On unified solution approach for solving multi-constraint travelling salesman problems with profits, 15 éme conférence de la société Française de Recherche Opérationnelle et Aide à la Décision- ROADEF 14, France.

33. **R. Lahyani, M. Khemakhem, F. Semet**, 2013. A unified heuristic for solving rich variants of orienteering problems, 14 éme conférence de la société Française de Recherche Opérationnelle et Aide à la Décision- ROADEF 13, France.

34. **R. Lahyani, M. Khemakhem, F. Semet**, 2012. *A general variable neighborhood search for a rich orienteering problem*, International Conference on Metaheuristics and Nature Inspired Computing-META'12, Tunisia.

35. **R. Lahyani, M. Khemakhem, H. Chabchoub**, 2010. *A multi compartment heterogeneous fixed fleet vehicle routing problem with time windows: New variants and formulations*, The 9th International Conference on Multiple Objective Programming and Goal Programming- MOPGP'10, Tunisia.

Technical Report

36. R. Lahyani, M. Khemakhem, F. Semet, H. Chabchoub, 2012. *Rich vehicle routing problem with compartments: generic model, experimental design analysis and new data set generator*, Technical Report, École Centrale de Lille, Lille.

Invited Talks

- *Optimizing hospital operations management under Covid-19 pandemic: a decision-making support system for Saudi hospitals.* Times Higher Education Magazine, Edition Research Excellence in Saudi Arabia, 2021. `https://flipbooks.timeshighereducation.com/19712/62978/index.html?39937`

- *Rich vehicle routing problems: from a taxonomy to a unified matheuristic.* CIRRELT Conference, Québec, Canada, May 2015.

Teaching Experience

Postgraduate Courses

- Supply chain management
- Total quality management
- Quantitative analysis
- Operations strategy

Undergraduate Courses

- Supply chain management
- Project risk management
- Quality management
- Quantitative methods for business
- Operations management
- Advanced Topics in operations management
- Operations research (Linear and non-linear programming)
- Operations research and numerical analysis for optimization
- Advanced algorithms and complexity
- Introduction to decisional computer science (Excel solver, Access, VBA)
- C programming language

Awards

- **Best Postgraduate Teaching Award**, College of Business, Alfaisal University, 2020-2021.
- **Best Undergraduate Teaching Award**, College of Business, Alfaisal University, 2019-2020.
- **University Best Research Award**, Alfaisal University, 2018-2019.
- **Best Research Award**, College of Business, Alfaisal University, 2017-2018.
- **Best Postgraduate Teaching Award**, College of Business, Alfaisal University, 2016-2017.
- **First prize** in *the 12th Annual Research Day Student Poster Competition.* G-B09, "Impact of COVID-19 on Operations and Supply Chains of Business and the Challenges to Development and Distribution of COVID-19 Vaccine" presented by Aljazi Alnafisah and Mahah Alfageeh (College of Business Master students), March 2021.
- **First, second and third prizes** in *the 11th Annual Research Day Student Poster Competition* UG-B03, UG-B06 and UG-B012 (College of Business B.Sc., students), March 2020.

- **First prize** in *the 10th Annual Research Day Student Poster Competition.* UG-B04, "Market Analysis for Renewable Energy, Recycling, and Green Technology", presented by Salman Al Saud, Khalid Al Saud and Mohammad Al Hokair (College of Business B.Sc., students), March 2019.

- **Third prize** in *the 10th Annual Research Day Student Poster Competition.* UG-B09, "Thara project", presented by Maha Abobakr, Mariam Jazieh, Nouf Alaskar, Ryanah Alsaif (College of Business B.Sc., students), March 2019.

- **Second prize** in *the 8th Annual Research Day Student Poster Competition.* UG-B03, "Open vehicle routing problem: state of the art classification and review",

- **First prize** in *the 6th BAESSA Project Student Competition.* "Elevate: a rehabilitation Center in Abha", presented by Abdullah Alshathri (College of Business B.Sc., students), February 2020.

- **First prize** in *the 5th BAESSA Project Student Competition.* "Life Light", presented by Sameer Al Otaibi (College of Business B.Sc., students), October 2019.

- **Fourth prize** in the 6th annual debate hosted by Princess Noura University in 2018. Topic "Saudization". presented by Ibrahim AlSemari (College of Business B.Sc., student), April 2017.

- Award of excellence for the **Best Presentation** at the *1st Annual Tunisian Operational Research Society Conference*", TORS'15, June 2015.

- Award of the **Best Student Paper** at the 1st *IEE International Conference on Logistics* , May 2011.

- Award of excellence for the **Best Student GPA** for the M.Sc., 2008-2009.

- Award of excellence for the **Second Best Student GPA** for the B.Sc., 2005-2006, 2006-2007 and 2007-2008.

Grants and Scholarships

- **Internal Research Grant** IRG C20117 from Alfaisal University, 10000 SAR, 2020-2021. "Optimizing hospital operations management under Covid-19 pandemic: a decision-making support system for Saudi hospitals".

- **Internal Research Grant** IRG 19102 from Alfaisal University, 30000 SAR, 2019-2020. "Open Vehicle Routing Problems: review, exact and approximate solutions".

- **Internal Research Grant** IRG 16119 from Alfaisal University, 35000 SAR, 2016-2018. "Optimization-based adaptive large neighborhood search for a rich distribution problem".

- **Post Doctoral Fellowship** at CIRRELT, Québec City, from 12/2014.

- **Post Doctoral Fellowship** at École Centrale de Lille "*Optimizing vehicle routing problems*" from 07/2014 to 11/2014.

- **Scholarship** from the University of Lille Nord de France and the Central Foundation Initiatives "*Help to international mobility*" to fund a one-month internship at the Interuniversity Research Centre on Entreprise Networks, Logistics and Transportation (CIRRELT), Montréal, July 2013.

- **Three-years Doctoral Scholarship** granted by the National Center for Scientific Research (CNRS), 01/2011-12/2013.

Supervising Experience

1. Supervising several B.Sc. students from Alfaisal University (College of Business) participating in the eight rounds of BAE Systems Project Management Student Competition, September 2017− December 2020.

2. Supervising several MBA and undergraduate students from Alfaisal University (College of Business)

    participating in AU annual research poster competition.

3. Sabrine Ismail (M.Sc. student), "For solving the multi depot fleet size and mix open VRP", with Habib Chabchoub, February 2017−July 2018.

4. Ibrahim AlSemari (B.Sc. student), "Open vehicle routing problem: state of the art classification and review", December 2016−April 2017.

5. Thomas Chabot (Ph.D. student),"Order Picking Problems under Weight, Fragility and Category Constraints", with Leandro C. Coelho, Jacques Renaud, March 2015−December 2016.

6. Anne-Lise Gouguenheim (B.Sc. student),"An adaptive large neighborhood search for the multi depot open VRP", with Leandro C. Coelho, May 2015−August 2015, January 2017−January 2018 .

7. Alexandra Roy (M.Sc. student), "Multi-compartment vehicle routing problem: a categorized bibliography", with Leandro C. Coelho, April 2015−June 2015.

8. Alireza Avakh (Ph.D. student), "An adaptive large neighborhood search for the multi knapsack problem with conflicts", with Leandro C. Coelho, March 2015−July 2015.

9. Louis Fisltroff (B.Sc. student), "Developing and studying several exact models for the loading aspect arising in logistics problems", with Frédéric Semet, December 2013-April 2014.

Community Service Activities

- Organize the first OPM Posters Exhibition PROPSA-1 "Practicum Research on Operations and Project Management in Saudi Arabia", May 2023. The conference studies the latest business analytics and artificial intelligence tools implemented by Saudi Companies. It features 20 posters, where four OPM judges selected the top three posters.

- Organize, jointly with two other faculty from the CoB, the First AU Management Conference (AUMC) in December 2021. The conference features 45 posters studying different operations and management problems based on real-life data collected from the Saudi Arabian business market.

- Organize and chair a conference session entitled "Vehicle Routing Problem" in TDAS/TORS 2019 Conference, Zarzis, Tunisia.

- Participate in running the eight rounds of the BAESSA Project Management Students Competition (Spring 2017-Spring 2019) and in organizing the awards ceremony of each round.

- Participate in organizing the international joint conference TORS/TDAS 2019 Conference, Zarzis, Tunisia.

- Ad hoc Reviewer of doctoral projects submitted in Nord-Pas de Calais Universities, France.

- Ad hoc Reviewer for *Omega, European Journal of Operational Research, IET Intelligent Transport Systems Journal, Informs journal on computing, SpringerPlus, Flexible Services and Manufacturing, Informs journal on computing.*

- Coach students from Alfaisal University (CoB & CoE) to participate in the 6th annual debate hosted by Princess Noura University in Spring 2018. It was a regional competition that hosted teams from the top 10 universities in Riyadh to debate on Saudization. We won the Fourth Place in this competition.

- Organize and chair a session entitled "Multiple-Objective VRP" in MOPGP'17 Conference, Metz, France.

- Judge in all the rounds of the BAE Systems Project Management Students Competition (Spring 2017-Spring 2019)

- Judge in several rounds of the Annual Research Day Student Poster Competition held by Alfaisal University.

- Member of the Organizing Committee, TORS'16: *2nd Annual Meeting of the Tunisian Operational Research Society*, December 16-18, 2016, Sousse, Tunisia.

- Attended the 5th *International Procurement and Supply Chain Conference*, December 2016, Riyadh, KSA.
- Review several internal research grant proposals for Effat University, KSA.
- Reviewer for several conferences e,g., TORS 2015, TORS 2017, INOC'13, MajecSTIC 2012.
- Vice-general secretary of the Tunisian Operational Research Society executive board, June 2015-June 2017.

Memberships

- Member of the organizing committee of the "2nd *Annual Tunisian Operational Research Society Conference*" TORS 2016, December 2016, Sousse, Tunisia.
- Member of the organizing committee of the "1st *Annual Tunisian Operational Research Society Conference*" TORS 2015, 12-14 June 2015, Sousse, Tunisia.
- Vice-president of the scientific committee of the "*Ninth event of Young Researchers in Science and Technology of Information and Communication*" MajecSTIC 2012, 29-31 October 2012, Lille, France.
- Member of Alfaisal University (CoB) Ph.D. Committee.
- Member of Alfaisal University (CoB) Hiring Committee.
- Member of Alfaisal University (CoB) Department Promotion Committee.
- Member of Alfaisal University (CoB) Strategic Plan Committee.
- Member of Alfaisal University (CoB) Advisory Council Awards 2018-2019.
- Member of Alfaisal University (CoB) Appeal Committee.
- Member of Alfaisal University (CoB) Research Committee.
- Member of Alfaisal University (CoB) Graduate Committee.
- Member of Alfaisal University (CoB) Undergraduate Committee.
- Member of GDR MACS Operations Research.
- Member of CIRRELT.
- Member of ROADEF - Société Française de Recherche Opérationnelle et Aide à la Décision.

Skills

Optimization: CPLEX (Callable Library, Concert Technology, Interactive Optimizer).

Statistical: EVIEWS, SPSS.

Experiments design: Design-Expert, R.

Programming languages: C, Java, Visual Basic for Applications.

Integrated development environment: Visual Studio, Eclipse.

Other knowledge: Procedural Programming, Object Oriented Programming, Artificial Intelligence.

Bibliographic management software: Pack Office, LaTeX.

Languages: French, English, Arabic.

References available upon request

Last update: October 2023