

# Hamed Milani

Last updated: April 16, 2025

## CONTACT INFORMATION

hamed.milani@gmail.com  
hamed.milani@ucalgary.ca  
www.hamedmilani.github.io  
www.linkedin.com/in/hamedmilani  
+98-938-030-5707

## EDUCATION

**University of Calgary, Haskayne School of Business**, Calgary, Canada  
Ph.D. in Operations and Supply Chain Management starting Fall 2025

**Koç University, Graduate School of Business**, Istanbul, Turkey  
Ph.D. in Operations Management and Information Systems 2021 - 2023  
GPA: 3.4/4  
(Degree is not obtained)

**Sharif University of Technology, Industrial Department**, Tehran, Iran  
M.Sc. in Industrial Engineering 2018 - 2021  
GPA: 17.21/20

**Urmia University of Technology, Industrial Department**, Oroumieh, Iran  
B.Sc. in Industrial Engineering 2011 - 2015  
GPA: 15.29/20  
Last two years GPA: 17.51/20

## RESEARCH INTERESTS

### Methods

Stochastic Modeling  
Dynamic Programming  
Queueing Theory  
Data-Driven Modelling and Optimization  
Machine Learning

### Applications

Healthcare Operations  
Behavioral Operations  
Supply Chain Management

## SELECTED GRADUATE COURSEWORK

Advanced Optimization Methods  
Integer and Combinatorial Optimization  
Stochastic Models and Application  
Dynamic Programming  
Queueing Theory  
Optimization Models in OM  
Data Driven Decision Making and Modeling  
Healthcare Information Systems

Mathematics for Economists  
Econometrics  
Game Theory

## TEACHING EXPERIENCE

### Teaching Assistant, Koç University

Management Information Systems, Prof. Serpil Sayin (Fall 2021, Fall 2022).  
Operations Management, Prof. Zeynep Akşin Karaesmen (Spring 2022, Spring 2023).  
Supply Chain Management, Prof. Zeynep Akşin Karaesmen (Fall 2021, Fall 2022).

### Teaching Assistant, Sharif University of Technology

Stochastic Processes, Prof. Alireza Haji (Fall 2019).

### Teaching Assistant, Urmia University of Technology

Probability Theory and Applications, Prof. Jahangoshai (Fall 2015).

"A Markov Decision Processes Model For Supplier Selection in Supply-Chain Management Under Uncertainty" (Advisor: Prof. Alireza Haji)

In this thesis, we study a two-echelon supply chain in which there is a retailer with a central distribution center in the first layer, and in the second layer, there are two suppliers with different levels of unreliability. Our goal is to decide about the proportion or quantity of our orders from each of the suppliers. The problem is modeled as a discrete-time Markov Decision Processes and solved in an exact way for finite time horizon. Our contribution is to introduce a new Markov Chain model with three states to control the unreliable supplier's more complicated behaviors.

Available at SSRN: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4833769](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4833769)  
Farsi version available at Sharif University's E-Library: <https://shorturl.at/q62mp>

**Summer Paper**

2023

"Energy-Efficient Resource Scheduling for a Single Machine with Production Constraints: A Mathematical Model" (Advisor: Prof. Barış Tan)

In this study, we consider a production system including a single machine and an input buffer. The system operates as a first come first serve queue. Our problem of interest is to control the energy efficiency considering operational costs of the system and also some production constraints such as desired throughput in each time period. We develop a mathematical programming formulation to determine the optimal plan for controlling the states of the server. In our setting, the machine has two states, on and off. Taking into account the uncertainty in the parameters of the model, we use a robust optimization approach to find a control plan that is feasible for all possible scenarios while minimizing the average cost of the system during the planning horizon.

Available upon request.

**Working Paper**

ongoing

**Milani H.**, Bijvank M., Piri H. "*Personalized Breast Cancer Screening by Combining Screening and Diagnostic Decisions.*" to be submitted to *Management Science*.

Mammography screening has been shown to be the most effective method for reducing breast cancer mortality [hp: remove the rest: at the population level through several randomized controlled trials]. However, it still faces significant inefficiencies, primarily due to three factors: a high false-positive rate, an excessive number of unnecessary follow-up examinations, and a lack of individualized screening guidelines. In this research, we aim to address these inefficiencies by combining screening and post-mammography diagnostic decisions into a unified framework to derive personalized policies for managing patients throughout the breast cancer screening pathway. We formulate this problem as a partially observable Markov decision process (POMDP), where our decision variables are twofold: screening decisions, which determine the optimal timing for mammography, and diagnostic decisions, which involve selecting the appropriate follow-up method to verify suspicious imaging results. We hypothesize that screening and diagnostic decisions are inherently interconnected, and that addressing them separately could result in suboptimal and less personalized screening pathways for patients.

Pre-print available at personal website.

**Working Paper**

ongoing

**Milani H.**, Bijvank M., Piri H. "*Trade-offs of Breast Cancer Screening Scenarios in Canada: A Microsimulation Modeling Study.*"

In this study, we evaluate the cost-effectiveness, cost-utility, and harm-to-benefit ratios of breast cancer screening scenarios using the OncoSim-Breast microsimulation model. We examine scenarios that expand current guidelines by introducing screening at ages 40 and 45 with varying intervals. Additionally, we consider hybrid scenarios with different screening intervals for ages below and above 50. Finally, we assess the impact of key parameters to test the robustness of our findings and explore the uncertainty surrounding estimated benefits, harms, and costs. A key strength of our study is its pioneering use of OncoSim- Breast for economic evaluation, enabling a detailed assessment of cost-effectiveness and harm-to-benefit trade-offs which to the best of our knowledge has not been considered in earlier studies. Unlike previous studies, our analysis considers a broad range of screening policies, including hybrid and single-phase strategies for younger age groups that have not been extensively examined before, adding to the existing body of literature that had not considered this aspect. Through this extensive range of scenarios, our analyses highlight the superior performance of hybrid strategies that initiate screening before age 50 while maintaining longer intervals for women aged 50 and older, particularly the scenario that offers annual screening for women aged 45–49 and triennial screening for those aged 50–74.

Pre-print available at personal website.

## Proposal

ongoing

**Milani H.** *"Long-term benefits of collaborating hospitals in Kidney Exchange Market."*

Kidney failure is one of the leading death causes around the world. Every year about 8,000 patients die because of end-stage renal disease (ESRD) in the United States. The only permanent cure for ESRD is kidney transplantation. Many patients in the kidney transplantation waiting lists have a willing family donor who is medically incompatible to donate a kidney. Kidney exchange (KE) was a novel innovation introduced by Alvin Roth (2004) that forms a swap of kidneys between these incompatible patient-donor pairs such that every patient receives a compatible kidney. One of the main issues in KE programs is that hospitals usually do not share their easy-to-match patients in larger programs. Some research showed that in the long term, it is also beneficial for social welfare to merge various KE centers even if they can match their pairs internally. In the matching market literature, Akbarpour et. Al (2020) showed that thickening the market substantially reduces the fraction of unmatched agents. Sonmez et al. (2011) discussed that there is a need to find mechanisms that have good incentive and efficiency properties for centers to participate in multi-center matchings. In this paper, we aim to investigate to what extent collaborating in larger KE programs accounts for matched friction and future renal failure, and also how to incentivize multiple kidney exchange centers to collaborate to thicken the patient-donor pools by addressing the benefits of collaboration in larger KE programs. Our goal is to study the causal effect of collaboration in larger KE programs in the total number of matched patient-donor pairs. We implement difference in difference methodology to address the self-selection bias in the decisions of hospitals' top-level officials.

Available at SSRN: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4833773](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4833773)

## INDUSTRY / INTERNSHIP EXPERIENCE

### Part-time Data Analyst

Koosha Advertising Agency, Tehran, Iran, August 01, 2019 - October 30, 2019

Project: Providing managerial dashboards to analyze the performance of the sales representatives.

### Part-time Project Control Manager

Mashid Sazan Technical Engineering Company, Tehran, Iran, September 23, 2018 -

July 22, 2019

Project: Designing project schedules, monitoring project progress and costs, and creating progress reports.

**Full-time Project Control Manager**

Mashid Sazan Technical Engineering Company, Tehran, Iran, Jun 22, 2018 - September 22, 2018

Project: Designing project schedules, monitoring project progress and costs, and creating progress reports.

**Industrial Engineering Intern**

Rakhsh Trailer Azar Industrial Company, Oroumieh, Iran, June 06, 2015 - July 17, 2015

Project: Statistical quality control of the welded parts.

**AWARDS AND HONORS**

**Haskayne School of Business Ph.D. Scholarships**, University of Calgary, 2024.

**Haskayne School of Business Ph.D. Scholarships**, University of Calgary, 2025.

**Graduate School of Business Scholarships**, Koç University , 2021.

**Ranked 12th in National Master Entrance Exam (among more than 8000 participants)**, Iran, 2018.

**Ranked 3rd in Master's Studies (Engineering Management Area)**, Sharif University of Technology, 2015.

**Registered and Honored Patent**, H.Milani, M.Pilpa, "*Design and Implementation of an Integrated Clouding Traffic Control System*", Patent Certificate Number 43314, Registered on State Deeds and Real Properties Organization, Tehran, Iran, 2007.

**COMPUTER SKILLS**

**Programming:** Python, MATLAB, C++.

**Statistical Package:** R, STATA, Rapid Miner.

**Operation Research:** CPLEX, GAMS.

**REFERENCES**

**Professor Marco Bijvank**

Haskayne School of Business

University of Calgary

E-Mail: marco.bijvank@haskayne.ucalgary.ca

**Professor Alireza Haji**

Department of Industrial Engineering

Sharif University of Technology

E-Mail: ahaji@sharif.edu

**Professor Hossein Piri**

Haskayne School of Business

University of Calgary

E-Mail: hossein.piri@ucalgary.ca

**Professor M. Jahangoshai Rezaee**

Department of Industrial Engineering

Urmia University of Technology

E-Mail: m.jahangoshai@uut.ac.ir

**Professor Serpil Sayin**

Graduate School of Business

Koç University

E-Mail: ssayin@ku.edu.tr