

# MUSTAFA OZKAYNAK

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## EDUCATION

**Ph.D, in Industrial and Systems Engineering. University of Wisconsin-Madison** August 2011

Advisor: Dr. Patricia Flatley Brennan

Dissertation Topic: Characterizing Workflow in Hospital Emergency Departments

*Summary: The purpose of my dissertation is to develop and test a methodology that could be used to characterize patient care in hospital emergency departments. The methodology uses a workflow approach and is guided by the cooperative work framework. The qualitative and quantitative analysis of the data showed a high level of variability. A deeper analysis identified patterns by clustering patient care episodes in terms of the sequence of activity-role pairs. This study contributes to industrial engineering research by introducing a theory based novel approach to define, operationalize and characterize workflow in a dynamic and complex work system. This dissertation contributes to health care delivery systems by providing a better understanding of the process aspect and informs health information technology design, implementation, and evaluation.*

**M.S, in Industrial and Systems Engineering. University of Wisconsin-Madison** 2006  
Area: Quality Engineering

**B.S, in Industrial Engineering. Marmara University, Istanbul, Turkey** 2000  
In Dean's Honor List

## RESEARCH INTERESTS

**Health systems:** Medical informatics, large scale and local care delivery systems, workflow (conceptualization, operationalization, capturing, modeling, visualization and analysis), cooperative work, health information exchange.

**Evaluation of Information Systems:** Multi-level evaluation, organizational factors and consequences, human factors and quality engineering techniques, complex sociotechnical systems.

**Field Studies:** Field observations, interviews, computer log analysis, mixed methods.

## EMPLOYMENT

**Worcester Polytechnic Institute** August 2011 – Present  
Postdoctoral Fellow

- Developing a proposal for NIH Pathway to Independence Award (K99/R00): The proposed research agenda aims to develop an integrated understanding of health management for a single patient as a continuous process takes place in two contexts: formal care delivery settings and daily living environments
- Coordinator of an Anticoagulation Management study, which is about understanding the structure dimension of Anticoagulation care quality
- Working in a Secure Messaging project, which examines the impact of secure messaging on patient care
- Consultant for Veterans Health Administration in Boston as a part of The New England Healthcare Engineering Partnership
- A part of a research team who is developing a proposal for the AHRQ Program entitled Understanding User Needs and Context to Inform Consumer Health Information Technology (IT) Design (R01)

**University of Wisconsin-Madison**

July 2007 - July 2011

Research Assistant in the Health Systems Laboratory

- Conducting research under supervision of Dr. Patricia Flatley Brennan
- Working in the EDLinking project, which is about implementing health information exchange technology at emergency departments in Milwaukee County, WI
- Research Activities: Evaluating a regional health information exchange project, conducting workflow analysis
- Project funded by Centers for Medicare and Medicaid Services

**University of Wisconsin-Madison**

July 2006-June 2007

Project Assistant in the Center for Instructional Materials & Computing

- Administered a network of 70 computers
- Supported computer users and troubleshooting
- Designed a documentation system

**University of Wisconsin-Madison**

September 2003-April 2006

Research Assistant in the Center for Quality and Productivity Improvement

- Conducted research under supervision of Dr. Pascale Carayon
- Worked in “Safe Medication Administration through Technology and Human Factors” project
- Research Activities: Evaluating interaction of nurses with new IV pumps in an academic hospital, designing an observation study and collecting data, Analyzing different types of qualitative and quantitative data
- Project funded by Agency for Healthcare Research and Quality (AHRQ)

**Turkish Institute for Industrial Management**

June 2000-August 2003

Researcher

- Responsibilities including designing and coordinating trainings and assisting in consultancy projects
- Trainings including organizational culture, strategic management and process management
- Selected projects:
  - Total quality management project in 15 hospitals of the largest health care network in Turkey
  - Organizational culture change project in the #1 ranked academic hospital of Turkey
  - Organizational change, strategic management and ISO 9000 studies in an insurance company, following privatization

**PUBLICATIONS**

*Submitted/In Preparation*

**Ozkaynak, M., & Brennan, P. F.** Defining patient oriented workflow and developing an observation instrument to capture patient oriented workflow in hospital emergency departments. IIE Transactions on Healthcare Systems Engineering.

**Ozkaynak, M., & Brennan, P. F.** Characterizing Workflow in Hospital Emergency Departments.

**Ozkaynak, M., Rose, A., Johnson S., & Tulu, B.** Characterizing the Structural Quality of Anticoagulation Management from Providers Perspective.

***Published/Accepted***

**Ozkaynak, M., & Brennan, P. F.** (Forthcoming) Revisiting Sociotechnical Systems in a Case of Unreported Use of Health Information Exchange System in Three Hospital Emergency Departments. *Journal of Evaluation in Clinical Practice*.

Carayon, P., Wetterneck, T. B., Hundt, A. S., **Ozkaynak, M.**, DeSilvey, J., Ludwig, B. et al. (2007). Evaluation of nurse interaction with bar code medication administration technology in the work environment. *Journal of Patient Safety*, 3(1), 34-42.

Carayon, P., Wetterneck, T. B., Hundt, A. S., **Ozkaynak, M.**, Ram, P., DeSilvey, J. et al. (2005). Observing nurse interaction with infusion pump technologies. In K. Henriksen, J. B. Battles, E. S. Marks & D. I. Lewin (Eds.), *Advances in patient safety: From research to implementation (volume 2: Concepts and methodology)*. Rockville (MD)

**PRESENTATIONS & POSTERS**

**Ozkaynak, M., Rose, A., Johnson S. & Tulu, B.** (2012). Understanding the Work System at Anticoagulation Clinics. To be presented at the Industrial Engineering Research Conference, Orlando, FL.

**Ozkaynak, M., Ancker, J., Vest, J., LaVenture, M., & Ross, S.** (2011). Evaluating HIE Systems: Understanding the Elephant by Examining Each Body Part. Panel presented at the American Medical Informatics Association Annual Symposium, Washington, D.C.

**Ozkaynak, M., & Brennan, P. F.** (2011). A Three Step Approach for Analyzing Workflow in Hospital Emergency Departments. Invited talk presented at the INFORMS Annual Meeting, Charlotte, NC

**Ozkaynak, M., & Brennan, P. F.** (2011). Studying Sequence for Non-Routine Work: Emergency Department Care Example. Presented at the Industrial Engineering Research Conference, Reno, NV.

**Ozkaynak, M., Brennan, P. F., & Haight, D.** (2010). Do health information exchange technologies cause delay in patient care. Poster presented at the American Medical Informatics Association Annual Symposium, Washington, D.C.

**Ozkaynak, M., Haight, D., & Brennan, P. F.** (2010). Unexpected users of a health information exchange technology. Poster presented at the American Medical Informatics Association Annual Symposium, Washington, D.C.

**Ozkaynak, M.** (2010). A Patient-Oriented Methodology to Characterize Workflow in Hospital Emergency Departments. Poster presented at the Industrial Engineering Research Conference, Cancun, Mexico.

**Ozkaynak, M., & Brennan, P. F.** (2010). Characterizing workflow in hospital emergency departments. Invited talk presented at the National Congress on Operations Research and Industrial Engineering, Istanbul, Turkey.

**Ozkaynak, M., & Brennan, P. F.** (2008). Poster presented at the American Medical Informatics Association Annual Symposium, Washington, D.C.

**Ozkaynak, M., Marquard, J., Hsieh, Y., Brennan, P. F., & Zayas-Cabán, T.** (2007). Are lay people ready for health information exchange. Poster presented at the American Medical Informatics Association Annual Symposium, Chicago, IL.

## TEACHING EXPERIENCE

- Guest Lecturer for the “Workflow Analysis” Class of the “System Design, Implementation, Evaluation and Maintenance Course” at Duke University, Fall 2011
- TA for Nursing 564 - Nursing and Health Informatics, Summer 2011
- Expected to complete the Delta Certificate in Research, Teaching, and Learning in May 2012. The delta program is housed in the University of Wisconsin-Madison (<http://www.delta.wisc.edu>).
- Co-Instructor: Research & Design in Home Care, Spring 2011.
- TA for Effective Teaching in the Global College Classroom, Fall 2010
- TA for Marketing 705 - Data Analysis and Decision Making, Summer 2006
- Guest Lecturer for various graduate and undergraduate courses
- Tutoring in statistics between 2004 - 2007

## PROFESSIONAL SERVICES

- Appointed to the student editorial board of Methods in Information and Medicine (2010-2011)
- Referee for Proceedings and Journals
  - Peer reviewed articles for the Journal of the American Medical Informatics Association (JAMIA)
  - Peer reviewed articles for the American Medical Informatics Association (AMIA) 2010 and 2011 Annual Meetings (2010- outstanding reviewer)
  - Peer reviewed articles for Applied Clinical Informatics (ACI)
  - Peer reviewed articles for Journal of the Association for Information Sciences (JAIS)
  - Peer reviewed articles for Medical Care
- Volunteer Translator for TED talks ([www.ted.com](http://www.ted.com))
- Mentor for a PhD candidate through mentornet.net
- University of Wisconsin-Madison Vilas Research Travel Grant Review Committee (Fall 2010)

## AWARDS and HONORS

- Accepted to the CHI 2012 workshop entitled “Bridging Clinical and Non-clinical Health Practices: Opportunities and Challenges”
- **Healthcare Information and Management Systems Society (HIMSS), Healthcare Information Management Systems Scholarship PhD recipient (2011)**
- Industrial and Systems Engineering Travel Grants (2007,2008 and 2011)
- Selected as an outstanding reviewer in the American Medical Informatics Association (AMIA) 2010 Annual Meeting
- Accepted to the IIE Doctoral Colloquium (2010)
- University of Wisconsin-Madison Graduate School Vilas Conference Presentation Grant (2010)
- The University of Wisconsin-Madison Graduate School Graduate Student Mentor Award (2008)
- The American Society of Quality Madison Chapter Scholarship (2005)
- Turkish Petroleum Foundation Scholarship (2003)
- Dean’s Honor List, Marmara University (2000)
- Dean’s award for contributing efforts to excellence in education (1999)

## PROFESSIONAL MEMBERSHIPS

HIMSS - Healthcare Information and Management Systems Society  
AMIA - American Medical Informatics Association  
IIE – Institute of Industrial Engineering  
INFORMS – Institute for Operations Research and the Management Sciences

## **OTHER COMMUNITY SERVICES**

Hoofers Outing Club

Canoeing Chair (2007-2009)

Canoeing Instructor (2006-2009)

Trip Leader (2006-2011)

University of Wisconsin-Madison International Students Services

Programming Committee Member (2006 - 2009)

Madison Association of Turkish Students

Executive Board Member (2003-2006)