

**WISDOM presents YoungWomen4OR in:
“Operations Management”
Join us for a coffee and a chat!**

What: EURO WISDOM Forum YoungWomen4OR Talks¹

Where: Zoom - Register in this Google [Form](#) to receive the Zoom link - The webinar will be recorded and made available afterwards on our [YouTube channel](#)

When: Friday, September 13th, 16:30 – 17:30 (Central European Time)

Webinar Format

- Introductions/Webinar etiquette – Prof. Ana Paula Barbosa-Póvoa, University of Lisbon, Portugal
- Operations – YoungWomen4OR Talks, each 10 minutes:
 - Maintenance modeling in systems subject to multiple degradation, Lucía Bautista Bárcena, Spain
 - When should suppliers adopt augmented reality technology in a dual-channel supply chain, Qin Zhou, UK
 - Design of a Centralized Alliance Based Coordination Mechanism for Renal Relief, Sirma Karakaya, Turkey
- Meeting the challenges - Overview/Current Challenges, synergies with existing work
 - Prof. Stefan Nickel, Karlsruhe Institute of Technology, Germany – 10/15 minutes
- Moderated open discussion with Coffee and Networking – 15 minutes

YoungWomen4OR Speakers



Dr. Lucía Bautista Bárcena

Title: Maintenance modelling in systems subject to multiple degradation

Abstract: As systems have become more sophisticated, there has been an increase in the number and nature of their components. Some of them show continuous degradation and others fail suddenly without warning.

Another approach to take into account is that the degradation processes affecting the system may appear at different times, triggered by an external process. Some maintenance strategies for systems subject to multiple degradation processes are proposed. Such systems can refer to

¹ WISDOM is a forum to support, empower, and encourage the participation of all genders in Operational Research and Management Science. It is an initiative supported by EURO, the Association of European Operational Research Societies. Please visit: <https://www.euro-online.org/web/pages/1654/wisdom>

systems with multiple components or systems subject to different degradation processes. Both points are equivalent in the following sense: systems subject to different degradation processes can be seen as a system of multiple components where not all the components start to deteriorate at the same instant of time. Since the introduction of continuous degradation processes, such as the Gamma or the Wiener processes, several extensions of these models have been proposed in order to offer a closer approach to real-life situations. A random effects model in which a parameter of the main degradation process follows a random variable is analysed. This allows the variability between the different degradation processes to be represented. In addition, dependencies that arise between components are addressed by studying the Pearson's correlation coefficient in the case of imperfect repairs in a system subject to a bivariate degradation.

See: [Lucía Bautista Bárcena](#)

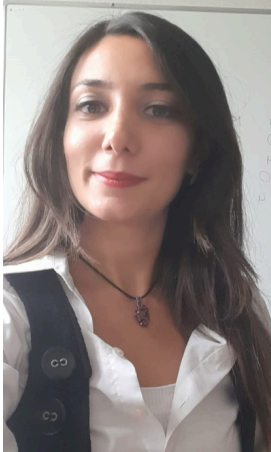


Dr Qin Zhou, *Southampton Business School, University of Southampton*

Title: When should suppliers adopt augmented reality technology in a dual-channel supply chain

Abstract: In practical business, an increasing number of suppliers are adopting augmented reality (AR) technology in their online channels to provide consumers with virtual try-on experiences.

While the adoption of AR technology is anticipated to enhance products matching level in online channels, it may also intensify channel competition and raise consumer's privacy concern cost. As a result, the wisdom of adopting AR technology in a dual-channel supply chain, which includes a physical retailer and a supplier operating an online channel, remains uncertain. To address the above challenge, we develop a stylized model to explore whether a supplier should embrace AR technology with consideration of consumer returns and consumer's privacy concern cost. Initially, we find that the adoption of AR technology does not always exacerbate price competition. Subsequently, we identify the conditions under which the supplier should adopt AR technology. The supplier should always adopt AR technology only when the supplier's unit selling cost is relatively high. When the supplier's unit selling cost is moderate, the supplier should adopt AR technology if the improvement rate of product matching is high. Whether the supplier should adopt AR technology when the supplier's unit selling cost is low depends on the improvement rate of product matching and consumer's privacy concern cost. Additionally, we find that the adoption of AR technology results in a win-win situation for both the supplier and retailer under certain conditions. Finally, we conduct two extensions to further validate the robustness of the conclusions, considering the likelihood of product mismatches in the offline channel and the fixed investment costs of AR technology. See: [Qin Zhou](#)



Sirma Karakaya, Özyegin University

Title: Design of a Centralized Alliance Based Coordination Mechanism for Renal Relief

Abstract: Our study focuses on the design of a centralized and alliance-based coordination mechanism for renal relief efforts. Previous disasters have consistently highlighted gaps in disaster preparedness and response levels for patients with chronic kidney disease, whose reliance on regular treatment makes interruptions potentially fatal.

Previous disasters have consistently highlighted gaps in disaster preparedness and response levels for patients with chronic kidney disease, whose reliance on regular treatment makes interruptions potentially fatal. Following disasters that render dialysis clinics inoperable, swiftly transferring these patients to available ones become a critical concern. Currently, public health authorities collaborate with clinics to facilitate these transfers from shelters, but face challenges in identifying available clinics and matching patients accordingly, leading to ad-hoc transfers that complicate the process. To address this, we propose a mathematical modeling approach to assist a centralized decision maker in establishing alliance relationships among clinics and assigning backup clinics for patients before disasters occur. Our approach accounts for uncertainties in post-disaster clinic capacities, ensuring the relevance of pre-disaster decisions in the aftermath of disasters.

See: [Sirma Karakaya](#)

Subject Matter Expert**Prof Stefan Nickel, Karlsruhe Institute of Technology - KIT (Germany)**

He is a full professor at the Karlsruhe Institute of Technology - KIT (Germany) and one of the directors of the Institute of Operations Research. He obtained his PhD in mathematics at the Technical University of Kaiserslautern (Germany) in 1995. From 1995 to 2003 he was assistant and associate professor in mathematics at the Technical University of Kaiserslautern. After a full professor position at the Saarland University (Chair of Operations Research and Logistics) from 2003 to 2009, he joined the Karlsruhe Institute of Technology as the Chair in Discrete Optimization and Logistics in April 2009. From 2014-2016 he was the dean of the Department of Economics and Management at the KIT.

Stefan Nickel was also a member of the scientific advisory board as well as of the management board of the Fraunhofer Institute for Applied Mathematics (ITWM) in Kaiserslautern from 2004-2016. Since 2011 he additionally holds the positions of one of the directors of the Karlsruhe Service Research Institute (KSRI) and of the Research Center for Computer Science (FZI). From 2006-2015 he was editor-in-chief of Computers & Operations Research. Moreover, he is editor-in-chief of Operations Research for Health Care. He has coordinated the Health Care working group within the German OR society (GOR) and has been the president of GOR from 2013-2014. Since 2019 Stefan Nickel serves as VP IFORS in the EURO executive committee and is member of the AC of IFORS.

Stefan Nickel has authored or co-authored 6 books as well as more than 120 scientific articles in his research areas Locational Analysis, Supply Chain Management, Health Care Logistics, and Online Optimization. He has been awarded the EURO prize for the best EJOR review paper (2012) and the Elsevier prize for the EJOR top cited article 2007-2011. In addition, he conducted several industry projects with well-known companies such as BASF, Lufthansa, Miele, or SAP.

See: [Stefan Nickel](#)