

July 2023

Proceedings of the International Conference on Industrial Engineering and Operations Management
ISSN / E-ISSN: 2169-8767
ISBN: 979-8-3507-0547-8

6th European Conference on Industrial Engineering and Operations Management

(Lisbon, Portugal, July 18-20, 2023)

Editor-in-Chief
Md Nazrul Islam, Ph.D.

IEOM Society International

Editorial Board:

Maria Antónia Gonçalves, Adjunct Professor, ISEP – Higher Institute of Engineering of Porto, Porto, Portugal
Dr. Adnan Hassan, Universiti Teknologi Malaysia
Dr. Cherrafi Anass, ENSAM- Meknes, Moulay Ismail University, Morocco
Taher Azar Ahmad, Benha University, Egypt
Alimohammad AHMADVAND, University of Eyvanekey, Iran
Michel ALDANONDO, Ecole des Mine d’Albi, France
Bandar A. Alkhayyal, Prince Sultan University, Saudi Arabia
Ahmad Taher AZAR, Benha University, Egypt
Armand BABOLI, INSA Lyon, France
Trishit BANDYOPADHYAY, Xavier School of Management, India
Andrés Felipe BARCO, Universidad de San Buenaventura-Cali, Colombia
Samuel BASSETTO, Ecole Polytechnique, Canada
Mahdi BASTAN, University of Eyvanekey, Iran
Philipp BAUMANN, University of Bern, Switzerland
Cedrick BELER, Institut National Polytechnique de Toulouse – Ecole Nationale d’Ingénieurs de Tarbes, France
Eric BONJOUR, ENSGSI – University of Lorraine, France
Robert BOUTE, KU Leuven, Belgium
Xavier BRUSSET, SKEMA Business School, France
Patricia Alcantara CARDOSO, Universidade Federal do Espírito Santo, Brazil
Kah Hin CHAI, National University of Singapore, Singapore
Aurélié CHARLES, University of Lyon France, France
Elyn Solano CHARRIS, Universidad de La Sabana, Columbia

Anis CHELBI, University of Tunis, Tunisia
Aidin Delgoshaei, Industrial Engineering Department, Kharazmi University, Tehran, Iran
Christine DI MARTINELLI, IESEG School of Management, France
Jose Arturo Garza-Reyes, The University of Derby, UK
Hamed Shakouri GANJAVI, University of Tehran, Iran
Laurent ENESTE, Institut National Polytechnique de Toulouse – Ecole Nationale d’Ingénieurs de Tarbes, France
Ali GHARBI, ETS Montreal, Canada
Bernard GRABOT, Institut National Polytechnique de Toulouse – Ecole Nationale d’Ingénieurs de Tarbes, France
Elise GRUHIER, University of Bordeaux France, France
Bhaskar GARDAS, Veermata Jijabai Technological Institute, India
Vastag GYULA, Széchenyi István University, Hungary
Marc Haddad, Lebanese American University, Lebanon
Khaled HADJ HAMMOU, Institut National des Sciences Appliquées de Lyon, France
Ramzi HAMMAMI, ESC Rennes School of Business, France
Alaa HASSAN, University of Lorraine, France
Petri HELO, University of Vaasa, Finland
Lazhar HOMRI, Arts et Métiers ParisTech, France
Lars HVAM, Technical University of Denmark, Denmark
Emmanuel HYON, Sorbonne Université – LIP6, France
Peter JACOBSEN, Technical University of Denmark, Denmark
Daouda KAMISSOKO, IMT Mines Albi, France
Özge Karanfil, Koç Üniversitesi, Turkey
Laoucine KERBACHE, HEC Paris, France
Javad KHAMISABADI, Islamic Azad University, Iran
Reza Ramazani KHORSHID-DOUST, Amirkabir University of Technology, Iran
Nathalie KLEMENT, Arts et Métiers ParisTech, France
Anil Kumar, University of Derby, UK
Arun KUMAR, RMIT University, Australia
Vikas KUMAR, University of the West England, UK
Elmar KUTSCH, Cranfield University, UK
Samir LAMOURI, ENSAM Arts et Métiers ParisTech, France
Carman LEE, Hong Kong Polytechnic University, Hong Kong
Danping LIN, Shanghai Maritime University, China
Chrity Yaqiong LV, Wuhan University of Technology, China
Lahcen MIFDAL, Universiapolis Agadir, Morocco
Mehrdad MOHAMMADI, IMT Atlantique, France
Seyed Meysam MOUSAVI, Shahed University, Iran
Simon Peter Nadeem, University of Derby, UK
Balkrishna NARKHEDE, National Institute of Industrial Engineering, India
Banu OZKESER, KOLUMAN Industry Automotive, Turkey
Maurice PILLET, Université de Savoie Mont Blanc, France
Rakesh RAUT, National Institute of Industrial Engineering, India
Nidhal REGZ, University of Lorraine, France
Luis Rocha-Lona, Instituto Politecnico Nacional, Mexico
Turki SADOK, University of Lorraine, France
Jérémy SCHUTZ, University of Lorraine, France

Sara SHAFIEE, Technical University of Denmark, Denmark
Shakouri G. Hamed, University of Tehran, Iran
Dellagi SOFIENE, University of Lorraine, France
Reza TAVAKKOLI-MOGHADDAM, University of Tehran, Iran
Ayeley TCHANGANI, Institut National Polytechnique de Toulouse – Ecole Nationale d’Ingénieurs de Tarbes, France
Norbert TRAUTMANN, University of Bern, Switzerland
Jiri TUPA, University of West Bohemia, Czech Republic
Yazgı TÛTÛNCÛ, Izmir University of Economics, Turkey
Eric VILLENEUVE, Ecole Supérieure des Technologies Industrielles Avancées, France
Junqiang WANG, Northwestern Polytechnic University, China
Yue WANG, Hang Seng Management College, Hong Kong
Yong WU, Griffith University, Australia
Christoph WUNCK, Jade University of Applied Sciences, Germany
Esma YAHIA, Arts et Métiers ParisTech, France
Bingwen YAN, Cape Peninsula University of Technology, South Africa
Marc ZOLGHADRI, Ecole des Ingénieurs en Mécanique de Paris, France
Funlade Sunmola, University of Hertfordshire, Hatfield, UK
Ali MOSTAFAEIPOUR, Industrial Engineering Department, Yazd University, Iran

International Conference of Industrial Engineering and Operations Management (ICIEOM) aims to publish quality research work in the field of industrial engineering and operations management (IEOM) for academics, researchers and practitioners to advance the theory and practice as well as to identify major trends in industrial engineering and operations management. The journal is expected to advance the theory and practice through publishing research-oriented papers with a wide variety of problems related on real-life applications and research which affect in global levels.

ICIEOM covers academic research and industrial issues/applications related on fundamentals of industrial engineering, operations management, business management, operations, design, manufacturing, supply chain management, logistics, systems and service engineering, innovation, entrepreneurship, reliability, quality, lean, six sigma, modeling, simulation, optimization, sustainability, machine learning, and artificial intelligence. The application areas include manufacturing, healthcare, energy, transportation, financial, and business operations. Articles must have scientific research contribution with state-of-the-art review.

Published by IEOM Society International, 21411 Civic Center Dr., Suite # 205, Southfield, Michigan 48076, Phone 1-248-450-5660, Email: info@ieomsociety.org

Open access proceedings are available online at
<https://index.ieomsociety.org/index.cfm/conference/view/ID/43>

Production Director

Md Taufiqul Islam, Ph.D.

Cover Illustration

Takiyah Ali