9th International Conference on
Industrial Engineering and
Operations Management
March 5-7, 2019, Bangkok, Thailand
Venue: JW Marriot Bangkok
IEOM Society

Ninth International Conference on
Industrial Engineering and Operations Management

Bangkok, Thailand, March 5-7, 2019, Venue: JW Marriot Bangkok Hotel

www.ieomsociety.org/ieom2019/

IEOM Society International, a 501(c)(3) nonprofit organization, is organizing the 9th International Conference on Industrial Engineering and Operations Management in Bangkok, Thailand, March 5-7, 2019. The conference aims to provide a forum for academics, researchers and practitioners to exchange ideas and recent developments in the field of Industrial Engineering and Operations Management. The conference is expected to foster networking, collaboration and joint effort among the conference participants to advance the theory and practice and to identify major trends in Industrial Engineering and Operations Management.

Authors can submit full paper(s) or abstract(s) only. IEOM Society encourages to submit full paper(s). All full papers will be subjected to double peer review. Accepted papers will be published in Proceedings and indexed by Scopus.

Tracks: Topics covering industrial issues/applications and academic research include, but are not limited to:

Artificial Intelligence	Lean and Six Sigma	Technology Management
Automation and Control	Logistics Management	Total Quality Management
Business Management	Material Flow Cost Accounting (MFCA)	Transportation and Traffic
Case Studies	Modeling and Simulation	Work Design, Measurement and ISO
Computers and Computing	Occupational Safety and Health (OSH)	
Construction Management	Operations Management	**Special Tracks**
Data Analytics and Big Data	Operations Research	Global Engineering Education (GEE)
Decision Sciences	Product Design and Development	Industry 4.0 for SMEs
Defense Management Science	Product Lifecycle Management	Industry Solutions
Design and Analysis	Production Planning and Management	Women in Industry & Academia (WIIA)
E-Business and E-Commerce	Project Management / Program Management	Panel Sessions on GEE, Industry 4.0 and WIIA
Energy	Quality Control and Management	
Engineering Economy	Reliability and Maintenance	**Competitions**
Engineering Education	Sensors and Sensing Systems	Undergraduate Student Paper Competition
Engineering Management	Service Systems and Service Management	Graduate Student Paper Competition
Entrepreneurship and Innovation	Software Testing and Quality Assurance	Doctoral Dissertation Competition
Facilities Planning and Management	Statistical Process Control	Master Thesis Competition
Financial Engineering	Statistics and Empirical Research	Undergraduate STEM Research Competition
Healthcare Systems	Supply Chain Management	Senior Capstone Design Project Competition
Human Factors and Ergonomics	Sustainability and Green Systems	High School & Middle School STEM Competition
IE / OM in Africa, Asia & Europe	Sustainable Manufacturing	Poster Competition
Industrial Management	Sustainable Production and Quality Management	Simulation Competition
Information Technology/Information Systems	Systems Dynamics	Lean Six Sigma Competition
Inventory Management	Systems Engineering	Logistic Supply Chain Competition

Fellows and Awards Recognition
Exhibitions
Sponsorship Opportunities

IEOM Student Chapters Activities Presentations and Gold, Silver & Bronze Awards
Sightseeing Tours
Career and High Studies Opportunities - Networking

Conference Chairs   Dr. Wichai Chattinnawat, Chiang Mai University, Thailand
Dr. Ahad Ali, Lawrence Technological University, Michigan, USA

Sponsors and Partners

Chiang Mai University — SIEMENS — EAT•N Powering Business Worldwide — UNB University of New Brunswick EST. 1785 — Lawrence Technological University — SCQE Society of Cost and Quality Engineers — Indian Institution of Industrial Engineering — BKSTI Badan Kerjasama — PSIE Pakistan Society of Industrial Engineers — AEEA African Engineering Education Association — IFEES International Federation of Engineering Education Societies

IEOM Society
"Achieving and Sustaining Operational Excellence"

www.ieomsociety.org

9th International Conference on
Industrial Engineering and Operations Management
March 5-7, 2019, Bangkok, Thailand
IEOM Society   **Venue: JW Marriot Bangkok**

Home   Authors   Program   Registration   Committee   Competitions   Keynote   Global Engineering Education   Industry Solutions   Sponsors   Travels

Final Program   **Proceedings**   **Photos**   **JOIN IEOM Member**

Scopus Indexing of IEOM Papers

Bangkok, Thailand, March 5-7, 2019
Venue: JW Marriott Hotel Bangkok

Emirates is our partner Airline
Code: EVE6DGO

Call for Papers – Flyer

Submission Link: https://www.xcdsystem.com/IEOM/abstract/index.cfm?ID=uLrg3GI

IEOM Society International is organizing 9th International Conference on Industrial Engineering and Operations Management in Bangkok, Thailand during March 5-7, 2019. The conference aims to provide a forum for academics, researchers and practitioners to exchange ideas and recent developments in the field of Industrial Engineering and Operations Management. The conference is also expected to foster networking, collaboration and joint effort among the conference participants to advance the theory and practice as well as to identify major trends in Industrial Engineering and Operations Management.

IEOM Society International is a 501(c)(3) nonprofit organization approved by IRS (USA).

IEOM Paper Template (*.docx)   IEOM Abstract Template (*.docx)

Authors can submit full paper(s) or abstract(s) only. Authors MUST use the conference template to prepare papers or abstracts. IEOM Society encourages to submit full paper(s). All full papers will be subjected to double peer review. Accepted papers will be published in the Proceedings and indexed in *SCOPUS*. Any submission implies that an author will attend the 2019 IEOM Bangkok Conference and present the paper or abstract.

IEOM Society International Site

IEOM Chapters around the World

IEOM Awards

Telah diperiksa kebenarannya dan sesuai dengan aslinya
Declares this translation to correspond to the original
Surabaya,
Dekan Fakultas Teknik
Dean Faculty of Engineering
Prof. Suryadi Ismadji, IPM., ASEAN Eng.
NIK. 521.93.0198

Special Tracks

- Global Engineering Education (GEE)
- Industry 4.0 for SMEs
- Industry Solutions
- Women in Industry and Academic (WIIA)
- **Panel Sessions** on GEE, Industry 4.0 for SMEs and WIIA

2018 INFORMS Annual Meeting, Phoenix, Nov. 4-7

African Engineering Education Association Events

COMPETITIONS:

Awards will be given for 1st, 2nd & 3rd place winners. ALL papers, posters or projects must be presented at the conference in Bangkok and winners will be selected after the oral or poster

WEEF 2017 Kuala Lumpur, Malaysia |

19

Home Authors Program Registration Committee Competitions Keynote Global Engineering Education Industry Solutions Sponsors Travels

Final   Program   **Proceedings**   **Photos**   **JOIN IEOM Member**

Scopus Indexing of IEOM Papers

Bangkok, Thailand, March 5-7, 2019
Venue: JW Marriott Hotel Bangkok

Emirates is our
partner Airline
Code: EVE6DGO

Call for Papers – Flyer

Submission Link: https://www.xcdsystem.com/IEOM/abstract/index.cfm?ID=uLrg3GI

IEOM Society International is organizing 9th International Conference on Industrial Engineering and Operations Management in Bangkok, Thailand during March 5-7, 2019. The conference aims to provide a forum for academics, researchers and practitioners to exchange ideas and recent developments in the field of Industrial Engineering and Operations Management. The conference is also expected to foster networking, collaboration and joint effort among the conference participants to advance the theory and practice as well as to identify major trends in Industrial Engineering and Operations Management.

IEOM Society
International is a
501(c)(3) nonprofit
organization
approved by IRS
(USA).

IEOM Paper Template (*.docx) IEOM Abstract Template (*.docx)

Authors can submit full paper(s) or abstract(s) only. Authors MUST use the conference template to prepare papers or abstracts. IEOM Society encourages to submit full paper(s). All full papers will be subjected to double peer review. Accepted papers will be published in the Proceedings and indexed in *SCOPUS.* Any submission implies that an author will attend the 2019 IEOM Bangkok Conference and present the paper or abstract.

IEOM Society
International Site

IEOM Chapters
around the World

IEOM Awards

Special Tracks

- Global Engineering Education (GEE)
- Industry 4.0 for SMEs
- Industry Solutions
- Women in Industry and Academic (WIIA)
- **Panel Sessions** on GEE, Industry 4.0 for SMEs and WIIA

2018 INFORMS
Annual Meeting,
Phoenix, Nov. 4-7

African Engineering
Education
Association Events

COMPETITIONS:

Awards will be given for 1st, 2nd & 3rd place winners. ALL papers, posters or projects must be presented at the conference in Bangkok and winners will be selected after the oral or poster

WEEF 2017 Kuala
Lumpur, Malaysia |

presentation. Winners will be announced and recognized at the conference award dinner on March 6, 2019 at the JW Marriott Hotel in Bangkok, Thailand.

- Undergraduate Student Paper Competition Sponsored by SIEMENS
- Graduate Student Paper Competition Sponsored by EATON Corporation
- Master Thesis Competition
- Doctoral Dissertation Competition
- Final Year Project (FYP)/Senior Capstone Design Project Poster Competition
- Undergraduate STEM Research Competition
- High School and Middle School STEM Competition
- Simulation Competition
- Lean Six Sigma Competition
- Logistics Supply Chain Competition
- Poster Competition

- IEOM 2018 Pretoria
- IEOM 2018 Washington DC
- IEOM 2018 Paris
- IEOM 2018 Bandung
  - Awards
- IEOM 2017 Bogota
- IEOM 2017 UK Photos
- IEOM 2017 Morocco Photos
- IEOM 2016 Detroit Photos
- IEOM 2016 Malaysia Photos
- IEOM 2015 Orlando Photos
- IEOM 2015 Dubai Photos
- IEOM 2014 Bali Photos
- IEOM 2012 Istanbul Photos

Important Dates

- Paper submission deadline: **October 31, 2018**
- Notification of acceptance: **November 10, 2018**
- Camera-ready submission deadline: **November 20, 2018**
- Early Bird Registration deadline: **December 15, 2018**
- Conference: **March 5-7, 2019**

1. Chiang Mai University, Thailand
2. Prince of Songkla University, Thailand
3. Khon Kaen University, Thailand
4. KMUTNB: King Mongkut's University of Technology North Bangkok
5. King Mongkut's Institute of Technology Ladkrabang (KMITL), Thailand
6. Universite De Lorraine, Nancy cedex – France
7. Binghamton University, The State University of New York (SUNY), USA
8. Industrial Engineering Department, Universitas Sebelas Maret, Surakarta, Indonesia
9. Lawrence Technological University, Michigan, USA
10. Narotama University, Surabaya, Indonesia
11. Prince Sultan University, Riyadh, Saudi Arabia
12. University of New Brunswick at Fredericton, Canada
13. Center for Advanced Systems Research and Education (CASRE), Tickle College of Engineering, The University of Tennessee, Knoxville, USA
14. Universitas Tarumanagara, Jakarta, Indonesia
15. Universiti Tun Hussein Onn Malaysia (UTHM)
16. UTM Razak Faculty of Technology and Informatics, Kuala Lumpur, Malaysia
17. Wayne State University, Detroit, Michigan, USA
18. University of the District of Columbia, Washington, DC, USA

New IEOM Student Chapter at King Abdulaziz University

University of Johannesburg, South Africa Started IEOM Student Chapter

IEOM has joined ESD (Engineering Society of Detroit) as an affiliated organization

IEOM K-12 STEM Poster Competition

1. Artha Solutions, Singapore
2. Eaton Corporation
3. Emirates – Official Airline Partner
4. SIEMENS
5. EFR Certification

1. African Engineering Education Association (AEES)
2. BKSTI: Agency for Cooperation of Higher Education of Industrial Engineering, Indonesia

3. Indian Institution of Industrial Engineering (IIIE)
4. International Federation of Engineering Education Societies (IFEES)
5. Pakistan Society of Industrial Engineers (PSIE)
6. Society of Cost and Quality Engineers (SCQE)

1. Advent2 Labs Consultation Pte Ltd, Singapore

Attendance Certificates will be provided for conference participants. Continuous Education Unit (CEU) is available. IEOM Society International will provide some awards and recognition at the 2019 IEOM Bangkok event.

Contact: info@ieomsociety.org

- Program – IEOM 2018 Paris
- Program – IEOM 2018 Bandung, Indonesia
- Program – IEOM 2017 Bogota
- Program – IEOM 2017 UK (Bristol)
- Program – IEOM 2017 Rabat, Morocco
- Program – IEOM 2016 Detroit
- Program – IEOM 2016 Kuala Lumpur
- Program – IEOM 2015 Orlando
- Program – IEOM 2015 Dubai
- Program – IEOM 2014 Bali
- Program – IEOM 2012 Istanbul
- Program – IEOM 2011 Malaysia
- Program – IEOM 2010 Dhaka

IEOM Publication Ethics and Malpractice Statement

IEOM Society International is a 501(c)(3) nonprofit organization, registered with the State of Michigan and tax exemption status approved by IRS.

IEOM Detroit 2016
ISBN: 978-0-9855497-5-6

IEOM 2016 KL
ISBN: 978-0-9855497-4-9

IEOM Orlando 2015
ISBN: 978-0-9855497-3-2

IEOM 2015 Dubai
ISBN: 978-0-9855497-2-5

IEOM 2014 Bali
ISBN: 978-0-9855497-1-8

IEOM 2012 Istanbul
ISBN: 978-0-9855497-0-1

IEOM 2011 KL
ISBN: 978-0-9808251-0-7

IEOM 2010 Dhaka
ISBN: 978-984-33-0988-4

9th International Conference on
Industrial Engineering and
Operations Management
March 5-7, 2019, Bangkok, Thailand
Venue: JW Marriot Bangkok

IEOM Society

Home   Authors   Program   Registration   Committee   Competitions   Keynote   Global Engineering Education   Industry Solutions   Sponsors   Travels

Conference Chairs

Dr. Wichai Chattinnawat, Chiang Mai University, Thailand
Dr. Ahad Ali, Lawrence Technological University, Southfield, Michigan, USA

Honorary Chair

Dr. Abdur Rahim, University of New Brunswick at Fredericton, Canada

Global Engineering Education Chairs

Dr. Abu Masud, Boeing Global Engineering Professor, Industrial and Manufacturing Engineering Department, Wichita State University, Kansas, USA
Dr. Hamid Parsaei, Professor of Industrial and Systems Engineering, Texas A&M University (College Station) and Director of Academic Outreach – Texas A&M University, Qatar

Industry Solutions Chairs

Edly Ramly, Lean Six Sigma Master Black Belt, EFR Certification, Malaysia
Masaru Tezuka, Hitachi Solutions East Japan, Ltd., Japan

Special Track on Industry 4.0 for SMEs Chair

Assoc. Prof. Apichat Sopadang, Department of Industrial Engineering, Chiang Mai University, Thailand

Women in Industry and Academia Chairs

Resh Plaha, Crystal Quality, UK
Dr. Ilham Kissani, Al Akhawayn University, Morocco

Program Chairs

Dr. Mohammed Khadem, Sultan Qaboos University, Oman
Dr. Abdul Talib Bon, UTHM, Malaysia
Dr. Norsyuhada Ab Shukor, Centre for Information and Communication Technology, National Defence University of Malaysia, Kuala Lumpur

Publication Chair

Dr. Mohammed Rahman, Central Connecticut State University, USA

Sponsors and Exhibitors Chair

Professor Don Reimer, Lawrence Technological University, Southfield, Michigan, USA

- Dr. Wichai Chattinnawat, Chiang Mai University, Thailand (Co-Chair)
- Professor Rene D. Estember, Mapua University, Manila, Philippines
- Dr. Abdul Talib Bon, Professor of Technology Management, UTHM, Malaysia
- Dr. Rosemary Seva, Dean of Gokongwei College of Engineering, De La Salle University – Manila, Philippines
- Dr.Wahyudi Sutopo, Professor and Chair of Industrial Engineering, Sebelas Maret University, Surakarta, Indonesia
- Dr. Mohammed Iqbal, Professor of Industrial Engineering, Shahjalal University of Science and Technology (SUST), Sylhet, Bangladesh
- Professor Dr. Parames Chutima, Director – Regional Centre for Manufacturing Systems Engineering, Faculty of Engineering, Chulalongkorn University, Bangkok, Thailand
- Dr. Paveena Chaovalitwongse, Head of IE Department, Faculty of Engineering, Chulalongkorn University,Phayathai Road, Bangkok, Thailand
- Pimprabha Sirito
- Tuangyot Supeekit, Industrial Engineering Department, Mahidol University, Bangkok, Thailand
- Dr. Ganda Boonsothonsatit, Technopreneurship Program, Institute of FIeld roBOtics, King Mongkut's University of Technology Thonburi, Thailand

Pr. Moulay Larbi Abidi, Director, École Mohammadia d'ingénieurs (EMI), Rabat, Morocco
Dr. Hesham Kamal Al-Fares, King Fahd University of Petroleum and Minerals, Saudi Arabia
Dr. Hamidi Bashir, Chairperson, Department of Industrial and Engineering Management, University of Sharjah, UAE
Dr. Mohamed Essaaidi, Professor and Director (Dean), ENSIAS College of Engineering – Mohamed V University in Rabat, Morocco
Dr. Devashis Mitra, Dean – Faculty of Business Administration, University of New Brunswick, Fredericton, Canada
Prof. Dr. Mohd Razali Muhamad, Deputy Vice Chancellor (Academic and Internationalization), Universiti Teknikal Malaysia Melaka
Professor Dr. Norazman Mohamad Nor, Deputy Vice Chancellor (Research and Innovation), National Defence University of Malaysia in Kuala Lumpur
Dr. Hamid R. Parsaei, Associate Dean for Academic Affairs, Texas A&M University at Qatar and Professor of Industrial and Systems Engineering, Texas A&M University
Dr. Ismail Tag, SVP & Provost, The Petroleum Institute, Abu Dhabi, United Arab Emirates
Dr. Noordin Mohd. Yusof, Dean, Faculty of Mechanical Engineering, Universiti Teknologi Malaysia

- Pr. Moulay Larbi Abidi, Director, École Mohammadia d'ingénieurs (EMI), Rabat, Morocco
- Dr. Muhammad Abid, Ghulam Ishaq Khan Institute of Engineering Sciences & Technology, Pakistan
- Dr. Olufemi Adetunji, University of Pretoria, South Africa
- Dr. Umar AL-Turki, King Fahd University of Petroleum and Minerals, Saudi Arabia
- Dr. Ronald G. Askin, Arizona State University, USA
- Dr. Shekar Babu, Founding Head, AMRITA School of Business, Bangalore, India
- Dr. Mohammed Ben-Daya, King Fahd University of Petroleum and Minerals, Saudi Arabia
- Dr. Abdul Talib Bon, Universiti Tun Hussein Onn Malaysia
- Dr. Raj Das, University of Auckland, New Zealand
- Dr. Kudret Demirli, Khalifa University, Abu Dhabi, UAE
- Dr. Jose Arturo Garza-Reyes, University of Derby, UK
- Dr. Alireza Ghasemi, Dalhousie University, Halifax, NS, Canada
- Dr. Moncer Abdelhamid Hariga, American University of Sharjah, United Arab Emirates (UAE)
- Dr. Mohammad D. Al-Tahat, The University of Jordan, Amman, Jordan
- Dr. Arun Kumar, Royal Melbourne Institute of Technology (RMIT) University, Australia
- Dr. Jay Lee, University of Cincinnati, USA
- Masaru Tezuka, Hitachi Solutions East Japan, Ltd., Sendai, Japan
- Dr. Abu Masud, Wichita State University, Kansas, USA
- Dr. Charles Mbohwa, University of Johannesburg, South Africa
- Dr. Samar Mukhopadhyay, GSB-Sung Kyun Kwan University, Seoul, Korea
- Dr. Mustapha Nourelfath, Université Laval, Quebec, Canada

- Dr. Nor Hasni Osman, Universiti Utara Malaysia
- Dr. Leonard Perry, University of San Diego, USA
- Dr. Ho Thanh Phong, International University – VNUHCM, Vietnam
- Dr. Yassine Ouazene, University of Technology of Troyes, France
- Dr. Abdur Rahim, University of New Brunswick, Canada
- Dr. Jafri Mohd Rohani, Universiti Teknologi Malaysia
- Dr. Mehmet Savsar, Kuwait University, Safat, Kuwait
- Dr. Rapinder Sawhney, University of Tennessee – Knoxville, USA
- Dr. Rosemary Seva, De La Salle University – Manila, Philippines
- Dr. Devdas Shetty, University of Hartford, Connecticut, USA
- Dr. Hamid Seifoddini, University of Wisconsin-Milwaukee, USA
- Dr. Alfredo Soeiro, University of Porto, Portugal
- Dr. Robert de Souza, The Logistics Institute – Asia Pacific, Singapore
- Dr. Masine Md. Tap, Universiti Teknologi Malaysia
- Dr. Zulkifli Mohamed Udin, Universiti Utara Malaysia
- Dr. Alok Verma, Old Dominion University, Norfolk, Virginia, USA
- Dr. Venkata Seshachala Sarma Yadavalli, University of Pretoria, South Africa
- Dr. Hari Agung Yuniarto, Universitas Gadjah Mada, Indonesia
- Dr. Li Zheng, Tsinghua University, China
- Dr. Henk Zijm, Dutch Institute for Advanced Logistics, University of Twente, Netherlands
- Prof. K Mpofu, Gibela Research Chair in Manufacturing and Skills Development, Faculty of Engineering and the Built Environment, Tshwane University of Technology, Pretoria, South Africa

Dr. Abu Masud, Wichita State University, Kansas, USA (Chair)
Dr. Hamid Parsaei, Texas A&M University (College Station) and Texas A&M University, Qatar (Co-Chair)
Dr. Jafri Mohd Rohani, Universiti Teknologi Malaysia
Dr. Grace Kanakana of Tshwane University of Technology, Pretoria, South Africa

- Dr. M. Khadem, Sultan Qaboos University, Muscat, Oman (Co-Chair)
- Dr. Abdul Talib Bon, Universiti Tun Hussein Onn Malaysia(Co-Chair)
- Dr. Rushan Ziatdinov, Department of Industrial & Management Engineering, Keimyung University, Daegu, South Korea
- Dr. Lina Aboueljinane, Industrial Engineering Program, École Nationale Supérieure des Mines de Rabat (ENSMR), Morocco
- Dr. Bouloiz Hafida, Industrial Engineering Department, National School of Applied Sciences (ENSA), Ibn Zohr University, Agadir, Morocco
- Dr. Jaouad Boukachour, Université Le Havre, France
- Dr. Tan Chan Sin, School of Manufacturing Engineering, Universiti Malaysia Perlis (UniMAP), Malaysia
- Dr. Lina Gozali, Universitas Tarumanagara, Indonesia

Dr. Zeki Ayağ, Kadir Has University, Turkey
Amine Belhadi, Industrial Engineering Research Team, Higher School of Technology, Safi, Cadi Ayyad University, Marrakech, Morocco
Navpreet Singh Chandok ,O2i Technologies, India
Dr. Rahul Chougule, Caterpillar India Pvt Ltd, Bangalore, India
Sameh Moh. Nour El-Din A-Razek, Al Ezz Dekheila Steel Co., Alexandria, Egypt
Abdullah Y Dhafer, Aramco, Saudi Arabia
Natasha Dzulkarnain, Construction Research Institute of Malaysia (CREAM)
Dr. Kenichi Funaki, Hitachi, Yokohama, Japan
Dr. Adel Hejaaji, Engineering Services Management (ESM) Limited, Essex, UK
Dr. Anwar Hossain, Daikin Applied, Minneapolis, Minnesota, USA
Ihfasuziella Ibrahim, Construction Research Institute of Malaysia (CREAM)
Hwa Kooi Kok, Intel Malaysia
Ali Massaeli, National Iranian Gas Company, Iran
Bob Mathur, Sr. Project Manager, Phillips 66 Refinery (Exxon), Linden, NJ, USA

German Moya, President at IEEE Costa Rica Section, Costa Rica
Paul Moore, International Mining, England, UK
Dr. Gerard O'Connor, Adelaide and Meath Hospital, Dublin, Ireland
Dr. Banu Ozkeser, Istanbul, Turkey
Dr. Sushil K. Shetty, Wilsonart LLC, Temple, Texas, USA
Masaru Tezuka, Hitachi Solutions East Japan, Ltd., Japan

Resh Plaha, Crystal Quality, UK
Dr. Chan Chee-Ming, Associate Professor and Deputy Dean (Academic and Research), Universiti Tun Hussein Onn Malaysia
Dr. Mey Goh, Assoc Professor in Product Design, Loughborough University, UK
Dr. Ilham Kissani, Faulty of Engineering & Management Science, Al Akhawayn University, Ifrane, Morocco
Dr. Stefanie Pillai, Dean and Associate Professor, Faculty of Languages & Linguistics, University of Malaya, Kuala Lumpur, Malaysia
Dr. Funda Sivrikaya Şerifoğlu, Bilgi University, Istanbul, Turkey
Dr. Adibah Shuib, Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA, Malaysia
Dr. Vanajah Siva, Chalmers University, Sweden
Vanessa Victoire, University of Mauritius
Prof. Soumaya Yacout, École Polytechnique de Montréal, Canada
Dr. Docki Saraswati, Universitas Trisakti, Jakarta, Indonesia
Dr. Ho Hwi Chie, Bina Nusantara University (Binus), Indonesia

Artificial Intelligence (AI)

Dr. Tagwa Ahmed Musa, Sudan University of Science and Technology, Khartoum, Sudan

Automation and Agility

Dr. Tawanda Mushiri, University of Zimbabwe, Harare, Zimbabwe

Business Management

Dr. Shekar Babu, AMRITA School of Business, Bangalore, India

Case Studies

Dr. Javad Feizabadi, MIT Global SCALE Network in Asia- Malaysia Institute for Supply Chain Innovation

Computers and Computing

Prof. Dr. Anand Kumar, M.S. Engineering College, Bangalore Karnataka, India

Construction Management

Hossam Hassaan, University of Alexandria, Alexandria, Egypt

Cybersecurity

Dr. Qutubuddin S.M., Industrial & Production Engineering Department, P.D.A. College of Engineering, Gulbarga, Karnataka, India

Data Analytics and Big Data

Dr. Ammar Aamer, Sampoerna University, Jakarta, Selatan, Indonesia

Decision Sciences

Dr. Azizur Rahman, Department of Industrial Engineering and Management, Khulna University of Engineering & Technology (KUET), Khulna -9203, Bangladesh

Defense and Aviation

- Mejar Wong Wai Loong, National Defence University of Malaysia
- Lt Kol Zamri bin Ismail, National Defence University of Malaysia

Design and Analysis

- Dr. Ahsanul Karim, Ford Motor Company, USA
- Prof. Ir. Dr. Mohd Khairol Anuar Mohd Ariffin, University Putra Malaysia (UPM), Selangor, Malaysia

e-Business/e-Service/e-Commerce

Dr. Christoph Wunck, Jade University, Wilhelmshaven, Germany

Energy

- Dr. Ali Mostafaeipour, Yazd University, Yazd, Iran
- Dr. Md. Mizanur Rahman, University Technology Malaysia (UTM), Johor Bahru, Malaysia

Engineering Economy

Prof. Jerekias Gandure, University of Botswana, Gaborone, Botswana

Engineering Education

- Dr. Chee-Ming Chan, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Johor, Malaysia
- Dr. Peter Toth, Trefort Agoston Centre for Engineering Education. Obuda University, Hungary

Engineering Management

Dr. Mehran Doulat. University of Wollongong, Wollongong, NSW, Australia

Entrepreneurship and Innovation

Dr. Indra Gunawan, The University of Adelaide, Australia

Environmental Engineering and Management

Dr.

Facilities Planning and Layout

Dr. Zeki Ayağ, Kadir Has University, Turkey

Financial Engineering

Dr. Vassilis C. Gerogiannis, Department of Business Administration, Technological Education Institute (TEI), Thessaly, Larissa, Greece

Healthcare Systems

- Dr. Farzad Firouzi, Department of Industrial Engineering .University of Sistan and Baluchestan, Zahedan, Iran
- Dr. Vahab VahdatZad, Northwestern University, USA

Human Factors and Ergonomics

Yoshiki B. Kurata, Industrial Engineering Department, Technological Institute of the Philippines Quezon City, Philippines

IE / OM in Asia

Dr. Ho Hwi Chie, Binus University, Indonesia

Industrial Management

Dr. Pravin Tambe, Associate Professor, Department of Industrial Engineering, Shri Ramdeobaba College of Engineering and Management, Nagpur, India

Industry Best Practices

- Edly Ramly, Lean Six Sigma Master Black Belt, EFR Certification, Malaysia
- Masaru Tezuka, Hitachi Solutions East Japan, Ltd., Japan

Information Technology and Information Systems

Prof. Sukhjeet Singh, Guru Nanak Dev Engineering College, Ludhiana, Punjab, India

Inventory Control and Management

Dr. Salvatore Miranda, University of Salerno, Italy

Lean and Six Sigma

- Dr. Bernardo Villarreal, Universidad de Monterrey, Mexico
- Edly Ramly, Lean Six Sigma Master Black Belt, EFR Certification, Malaysia
- Abdullah Y Dhafer, Aramco, Saudi Arabia

Logistics Management

Dr. Wahyudi Sutopo, Universitas Sebelas Maret, Surakarta, Indonesia

Manufacturing and Production

- Dr. Noha Mostafa, Industrial Engineering Department, Zagazig University, Egypt
- Dr. Wisnu Aribowo, ITB, Indonesia

Material Flow Cost Accounting (MFCA)

Dr. Wichai Chattinnawat, Chiang Mai University, Thailand

Modeling and Simulation

- Dr. Ali ElKamel, University of Waterloo, Canada
- Dr. Magdy Helal, American University of the Middle East (AUM), Kuwait

Occupational Safety and Health (OSH)

Dr. Jafri Mohd Rohani, Universiti Teknologi Malaysia

Operations Management

- Dr. Youssef Boulaksil, United Arab Emirates University, Al Ain, UAE
- Dr. Fernando González Aleu, Departamento de Ingeniería, Universidad de Monterrey, Mexico

Operations Research

- Prof. Rene Estember, Mapua University, Philippines
- Dr. Michael Mutingi, National University of Science & Technology, Windhoek, Namibia

Optimization and Mathematical Sciences

- Dr. Md. Haider Ali Biswas, Khulna University, Bangladesh
- Dr. Bhavin J. Shah, Indian Institute of Management Indore, Madhya Pradesh, India
- Dr. Kuldeep Chaudhary, Department of Mathematics, Amity Institute of Applied Sciences, Amity University, Noida

Product Design and Development

Dr. Abdalla Alrashdan, Alfaisal University, Riyadh, Saudi Arabia

Product Lifecycle Management (PLM)

Dr. Ali Allahverdi, Kuwait University, Kuwait

Production Planning and Control

Dr. Gede Agus Widyadana, Petra Christian University, Indonesia

Project Management

- Dr. Ammar Aamer, Sampoerna University, Jakarta, Indonesia
- Bob Mathur, Phillips 66 Refinery (Exxon), Linden, NJ, USA

Quality Control and Quality Management

Dr. Ferdous Sarwar, IPE, BUET, Dhaka, Bangladesh

Reliability and Maintenance

Dr.-Ing. Zied Hajej, Université de Lorraine, France

Sensors and Sensing Systems

Dr. Mukti Rana, Delaware State University, USA

Service Engineering and Service Management

Dr. Kannapha Amaruchkul, National Institute of Development Administration, Thailand
Dr. Surendra Kansara, Symbiosis Institute of Operations Management (SIOM), New Cidco, Nashik, Maharashtra, India

Software Testing and Quality Assurance

Professor Mohammed Mannan, SSA and Adjunct Professor of UDC

Statistical Process Control

Engr. Maricar M. Navarro, Industrial Engineering Department, Technological Institute of the Philippines Quezon City, Philippines

Supply Chain Management

Dr. Shao Hung Goh, Singapore Institute of Management (SIM) University, Singapore

Sustainability in Supply Chain, Enterprise Operations and Strategies including Food Supply Chain

- Prof. Jose Arturo Garza-Reyes, Derby Business School, University of Derby, UK
- Dr. Vikas Kumar, Bristol Business School, University of the West of England, UK

Sustainability and Green Systems

Dr. Asela K. Kulatunga, University of Peradeniya, Sri Lanka

Sustainable Manufacturing

Dr. Sambil Charles Mukwakungu, University of Johannesburg, South Africa
Dr. Bikram K Bahinipati, Professor – Operations Management Area, Xavier Institute of Management Bhubaneswar (XIMB), Bhubaneswar, India

Systems Dynamics

Dr. Mahdi Bastan, University of Eyvanekey, Garmsar, Iran

Systems   Engineering

Dr. Olumuyiwa Asaolu, Department of Systems Engineering, University of Lagos, Nigeria

Technology Management

Dr. Norizah Mohamad, Universiti Sains Malaysia (USM), Pulau Pinang, Malaysia

Total Quality Management (TQM)

- Dr. Salah Haridy, Department of Industrial Engineering and Engineering Management, University of Sharjah, Sharjah, UAE
- Dr. M. Shamsuzzaman, Department of Industrial Engineering and Engineering Management, University of Sharjah, Sharjah, UAE

Transportation and Traffic

Dr. Abbas Mahmoudabadi, Mehrastan University, Gilan, Iran

Waste Management

Ms. Sebonkile Thaba, University of Johannesburg, South Africa

Work Design, Measurement,   Standardization and ISO

Dr. Yunos Ngadiman, Universiti Tun Hussein Onn Malaysia

Doctoral Dissertation Competition Chair

 Dr. Mehran Doulat: Visiting Senior Research Fellow & Guest Lecturer, Meiji University, Tokyo, Japan

Master Thesis Competition Chairs

Dr. Seifedine Kadry, Beirut Arab University Lebanon
Dr. Suat Kasap, Industrial Engineering, American University of the Middle East, Kuwait

Graduate/Postgraduate Student Paper Competition Chair

Dr. Ahm Shamsuzzoha, University of Vaasa, Finland

Undergraduate Student Paper Competition Chair

Dr. Abbas Mahmoudabadi, MehrAstan University, Gilan, Iran

Senior Design Capstone Project / FYP Poster Competition Chair

Dr. M. Shamsuzzaman, University of Sharjah, UAE

Undergraduate Research Competition Chair

Dr. Md. Mizanur Rahman, University Technology Malaysia (UTM), Johor Bahru, Malaysia

High School / Middle School STEM Competition Chairs

Professor Don Reimer, Lawrence Technological University, MI, USA

Poster Competition Chair

Dr. Docki Saraswati, Industrial Engineering, Universitas Trisakti, Jakarta, Indonesia

Supply Chain and Logistics Competition Chair

Dr. Abdelaziz Berrado, The Ecole Mohammadia d'Ingénieurs (EMI), Rabat, Morocco

Lean Six Sigma Competition Chair

Dr. Majedul Islam, Queensland University of Technology, Brisbane, Australia

Simulation Competition Chair

Dr. Neil Murray, ZF-TRW, USA

- Dr. A.O. Adewumi, University of KwaZulu-Natal, South Africa
- Dr. Kondo H. Adjallah, Paul-Verlaine University, France
- Dr. Abdollah Aghaie, K.N. Toosi University of Technology, Iran
- Dr. Abdul-Rahman Al-Ali, American University of Sharjah, United Arab Emirates
- Gasim Al-Hawarii, Senior Fleet Management Engineer, Dubai Municipality, United Arab Emirates
- Ali I. Al-Mosawi, Miskolic University, Faculty of Materials Science and Engineering, Hungary
- Dr. Fernando González Aleu, Departamento de Ingeniería, Universidad de Monterrey, Mexico
- Dr. Bandar A. Alkhayyal, Prince Sultan University
- Dr. Kuchkarov Atamurat, Uzbekistan National University, Uzbekistan
- Dr. Faieza Abdul Aziz, Universiti Putra Malaysia, Selangor, Malaysia
- Dr. Amir Azizi, Universiti Malaysia Pahang, Malaysia
- Amine Belhadi, Industrial Engineering Research Team, Higher School of Technology, Safi, Cadi Ayyad University, Marrakech, Morocco
- Dr. Behnam Bahrami, Eastern Mediterranean University, Famagusta, Cyprus
- Dr. D. K. Banwet, IIT-Delhi, India
- Dr. Abdelaziz Berrado, The Ecole Mohammadia d'Ingénieurs (EMI), Rabat, Morocco
- Dr. Mahdi Bashiri, Shahed University, Iran
- Dr. Vladimir Beresnev, Sobolev Institute of Mathematics, Russia
- Dr. Haider Ali Biswas, Khulna University, Bangladesh
- Dr. Miguel Sanz Bobi, Comillas Pontifical University, Spain
- Dr. Nejib Chouaibi, Polytechnic School of Tunisia, Tunisia
- Dr. Mohammad Ishak Desa, Universiti Teknologi Malaysia, Johor Bahru, Malaysia
- Dr. Mehran Doulat, Center for Quality and Sustainability, School of Engineering and Advanced Technology, UTM Kuala Lumpur, Malaysia
- Dr. Omar Elmabrouk, Benghazi University, Libya
- Dr. Dinusha Gamage, University of Moratuwa, Sri Lanka
- Dr. Rodrigo Garrido, Universidad Adolfo Ibaez, Chile
- Dr. Vassilis Gerogiannis, Department of Project Management, Greece
- Dr. Jahara bint Ghani, UKM, Malaysia
- Dr. Salah Haridy, Department of Industrial Engineering and Engineering Management, University of Sharjah, Sharjah, UAE
- Dr. Ravi Gor, St. Kabir Institute of Professional Studies, Ahmedabad, India
- Dr. Kannan Govindan, University of Southern Denmark, Denmark
- Dr. Indra Gunawan, The University of Adelaide, Australia
- Dr. Md. Mamun Habib, Brac University, Bangladesh
- Dr. Ramy Harik, University of South Carolina, USA
- Dr. Maruf Hasan, University of New South Wales, Australia
- Dr. Ahmed Kadhim Hussein, Babylon University, Iraq
- Dr. Md. Abdus Samad Kamal, Monash University, Sunway Campus, Malaysia

- Dr. Javad Khamisabadi, Islamic Azad University, Tehran, Iran
- Dr. Raja Kothandaraman, Alpha College of Engineering, Chennai, Tamilnadu, India
- Dr. Brigitte Jaumard, Concordia University, Canada
- Dr. Rashmi Jha, Gitarattan International Business School (GIBS), Affiliated to Guru Gobind Singh Indraprastha University, New Delhi, India
- Dr. Shahrul B. Kamaruddin, Universiti Sains Malaysia
- Prof. Dr. Anand Kumar, M.S. Engineering College, Bangalore Karnataka, India
- Dr. Nani Kurniati, Institute of Technology Sepuluh Nopember (ITS), Surabaya, East Java, Indonesia
- Dr. Francis Leung, City University of Hong Kong, China
- Dr. Motah Mahendrenath, University of Technology, Mauritius
- Dr. Boudouda Malik, University of Champagne-Ardenne, France
- Dr. Ilias Mamat, Quest International University Perak, Ipoh, Perak, Malaysia
- Dr. Fulufhelo Masithulela, University of South Africa, Johannesburg, South Africa
- Dr. Abderrahmane Mellak, University of Boumerdes, Algeria
- Dr. Yuan Xue Ming, SIMTech: Singapore Institute of Manufacturing Technology, Singapore
- Dr. Ruchi Mishra, Institute of Management, Nirma University, Ahmedabad, India
- Dr. Vladimir Modrak, TUKE, Slovakia
- Dr. Norhamidi Muhamad, UKM, Malaysia
- Dr. Michael Mutingi, University of Botswana, Botswana
- Dr. Arun N. Nambiar, California State University – Fresno, USA
- Dr. Cecilia Nembou, Divine Word University, Papua New Guinea
- Dr. Sawat Pararach, Thammasat University, Thailand
- Dr. Ratri Parida, National Institute of Construction Management and Research (NICMAR), Pune, Maharashtra, India
- Dr. Eui H. Park, North Carolina A&T State University, USA
- Dr. Md. Mizanur Rahman, Universiti Malaysia Sabah (UMS), Kota Kinabalu, Sabah, Malaysia
- Dr. T. Ramayah, School of Management, Universiti Sains Malaysia
- Dr. Raja Zuraidah Raja Mohd Rasi, Universiti Tun Hussein Onn Malaysia
- Dr. Bhuvenesh Rajamony, University Malaysia Perlis (UniMAP), Malaysia
- Dr. Ramakrishnan Ramamoorthy, Yanbu Industrial College, Yanbu, Saudi Arabia
- Dr. Mohd Abdur Rashid, University Malaysia Perlis (UniMAP), Malaysia
- Dr. Syed Asif Raza, Qatar University, Qatar
- Dr. Nubia Milena Velasco Rodriguez, Universidad de Los Andes, Colombia
- Dr. P. Sanjeevikumar, Dublin Institute of Technology, Ireland
- Dr. Mahmood Shafiee, Cranfield University, Bedfordshire, United Kingdom
- Dr. Ahm Shamsuzzoha, University of Vaasa, Finland
- Dr. Sharan Shetty, School of Management & Business, Manipal International University, Putra Nilai, Malaysia
- Dr. Abdussalam Shibani, Coventry University, UK
- Dr. Sarbjit Singh, National Institute of Technology, Jalandhar, Punjab, India
- Dr. Shahryar Sorooshian, University Malaysia Pahang, Malaysia
- Dr. Jayakanth Srinivasan, MIT Sloan School of Management
- Dr. Gopalan Srinivasan, University of New Brunswick, Canada
- Dr. Zuraidah Sulaiman, Universiti Teknologi Malaysia (UTM), Johor, Malaysia
- Dr. Balan Sundarakani, University of Wollongong in Dubai, UAE
- Dr. Murat Caner Testik, Hacettepe University, Ankara, Turkey
- Dr. Theodore B. Trafalis, University of Oklahoma, USA
- Dr. Vladimir I. Tsurkov, Russian Academy of Sciences, Moscow, Russia
- Dr. Jiří Tupa, Faculty of Electrical Engineering, University of West Bohemia, Pilsen, Czech Republic
- Dr. Hui-Ming Wee, Chung Yuan Christian University, Taiwan
- Dr. Yong Yin, Yamagata University, Japan
- Dr. Norzaidahwati Zaidin, Universiti Teknologi Malaysia, Johor, Malaysia
- Dr. Suhaiza Hanim Zailani,University Malaya, Malaysia
- Dr. Linda L. Zhang, IESEG School of Management, Lille-Paris, France
- Dr. Suat Kasap, Industrial Engineering, American University of the Middle East, Kuwait
- Dr. Mahdi Bastan, University of Eyvanekey, Garmsar, Iran
- Dr. Hamed Shakouri G., University of Tehran, Tehran, Iran
- Dr. Reza Ramazani K., Amirkabir University of Technology, Tehran, Iran
- Dr. Ahmad Taher Azar, Benha University, Benha, Egypt
- Dr. Farzad Firouzi, Department of Industrial Engineering .University of Sistan and Baluchestan, Zahedan, Iran
- Dr. Murat Kucukvar, Qatar University, Qatar
- Dr. Noha Mostafa, Industrial Engineering Department, Zagazig University, Egypt

- Dr. Dani Harmanto, Research Cluster for Advanced Design and Simulation, Visiting Professor for Indonesia Ministry of Higher Education, College of Engineering and Technology, University of Derby, UK
- Dr. Arjun K. Gupta, Bowling Green State University, Ohio, USA

- Santosh Gudagunti, MSIE Student, Lawrence Technological University, Michigan, USA
- Kaustubh Kale, MSIE Student, Lawrence Technological University, Michigan, USA
- Abhishek Astagi, MSIE Student, Lawrence Technological University, Michigan, USA
- Ammar Hawa, MSIE Student, Lawrence Technological University, Michigan, USA
- Vignesh Vasant Kumar, Engineering Management Student, Lawrence Technological University, Michigan, USA
- Jinendra.Ijari, MSIE Student, Lawrence Technological University, Michigan, USA

Website Coordinators

Christian Forrest, Manager of Web Services, Lawrence Technological University, Michigan, USA
Suvro Sudip, Undergraduate Student at Lawrence Technological University, Michigan, USA

Conference Secretariat

Dr. Taufiqul Islam,Operations Manager, IEOM Society International

9th International Conference on
**Industrial Engineering and
Operations Management**
March 5-7, 2019, Bangkok, Thailand
Venue: JW Marriot Bangkok

IEOM Society

Home   Authors   Program   Registration   Committee   Competitions   Keynote   Global Engineering Education   Industry Solutions   Sponsors   Travels

ID 011 Anaerobic Digestion of Kitchen and Sewage Sludge Bio waste to Biogas using Engineered Bio catalysis

M. M. Manyuchi, BioEnergy and Environmental Technology Centre, Department of Operations and Quality Management, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa
Department of Chemical and Processing Engineering, Faculty of Engineering, Manicaland State University of Applied Sciences, Zimbabwe
C. Mbohwa, BioEnergy and Environmental Technology Centre, Department of Operations and Quality Management, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa
M. Mpeta, Department of Environmental Engineering, Faculty of Engineering, Chinhoyi University of Technology, Zimbabwe
E. Muzenda, BioEnergy and Environmental Technology Centre, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa
Department of Chemical, Materials and Metallurgical Engineering, Faculty of Engineering and Technology, Botswana International University of Science and Technology, P Bag 16, Palapye, Botswana

ID 012 Operations improvement in a manufacturing business of make-to-order special vehicles

Inês Azevedo, Faculty of Engineering, University of Porto, Rua Dr. Roberto Frias, s/n 4200-465 Porto, Portugal
Vera L. Migueis and Americo Azevedo, Faculty of Engineering, University of Porto, Rua Dr. Roberto Frias, s/n 4200-465 Porto, Portugal
INESC TEC, Rua Dr. Roberto Frias, Campus da FEUP, 4200-465 Porto, Portugal

ID 013 Methane Generation from Landfill Waste as a Resource Recovery Strategy

Mercy Manyuchi, Department of Operations and Quality Management, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa
Department of Chemical and Processing Engineering, Faculty of Engineering, Manicaland State University of Applied Sciences, Zimbabwe
C. Mbohwa, Department of Operations and Quality Management, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa
M. Mpeta, Department of Environmental Engineering, Faculty of Engineering, Chinhoyi University of Technology, Zimbabwe
E. Muzenda, Department of Chemical Engineering and Technology, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa
Department of Chemical, Materials and Metallurgical Engineering, Faculty of Engineering and Technology, Botswana International University of Science and Technology, P Bag 16, Palapye, Botswana

ID 014 Environmental Impacts for Setting up a Waste to Energy Landfill Site

M. M. Manyuchi, BioEnergy and Environmental Technology Centre, Department of Operations and Quality Management, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa
Department of Chemical and Processing Engineering, Faculty of Engineering, Manicaland State University of Applied Sciences, Zimbabwe
C. Mbohwa, BioEnergy and Environmental Technology Centre, Department of Operations and Quality Management, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa
M. Mpeta, Department of Environmental Engineering, Faculty of Engineering, Chinhoyi University of Technology, Zimbabwe
E. Muzenda, BioEnergy and Environmental Technology Centre, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa

Department of Chemical, Materials and Metallurgical Engineering, Faculty of Engineering and Technology, Botswana International University of Science and Technology, P Bag 16, Palapye, Botswana

ID 015 Projector Nonlinear Gamma Effect Reduction for Fringe Projection

Dr. Javier Cruz Salgado, Technology Development Department, Universidad Politécnica del Bicentenario, Silao Guanajuato, 36283, México

ID 020 Integrated Quality Environmental Management Practices and its Impact on Operational and Environmental Performances in Food Processing SMEs

Jamaludin K.R., Hayati Habibah Abdul Talib & Syed Ali Raza Shah, Razak Faculty of Technology and Informatics, Universiti Teknologi Malaysia, Jalan Sultan, Yahya Petra, 54100 Kuala Lumpur, Malaysia

ID 021 Contractors Perception towards Excavation Hazard

Clinton Aigbavbao, Sustainable Human Settlement and Construction Research Centre, Department of Construction Management & Quantity Surveying, University of Johannesburg, Doornfontein Campus, Johannesburg, 2028, South Africa
Zakari Mustapha, School of Engineering, Department of Building Technology, Cape Coast Technical University, Cape Coast, Ghana
Wellington Didi Thwala, Sustainable Human Settlement and Construction Research Centre, Department of Construction Management & Quantity Surveying, University of Johannesburg, Doornfontein Campus, Johannesburg, 2028, South Africa

ID 022 Major Excavation Hazard in Cape Coast Metropolis

Wellington Didi Thwala, Sustainable Human Settlement and Construction Research Centre, Department of Construction Management & Quantity Surveying, University of Johannesburg, Doornfontein Campus, Johannesburg, 2028, South Africa
Zakari Mustapha, School of Engineering, Department of Building Technology, Cape Coast Technical University,
Cape Coast, Ghana
Clinton Aigbavbao, Sustainable Human Settlement and Construction Research Centre, Department of Construction Management & Quantity Surveying, University of Johannesburg, Doornfontein Campus, Johannesburg, 2028, South Africa

ID 023 Contractors Perception towards Excavation Hazard

Clinton Aigbavbao and Wellington Didi Thwala, Sustainable Human Settlement and Construction Research Centre, Department of Construction Management & Quantity Surveying, University of Johannesburg, Doornfontein Campus, Johannesburg, 2028, South Africa
Zakari Mustapha, School of Engineering, Department of Building Technology, Cape Coast Technical University, Cape Coast, Ghana

ID 024 Major Excavation Hazard in Cape Coast Metropolis

Clinton Aigbavbao and Wellington Didi Thwala, Sustainable Human Settlement and Construction Research Centre, Department of Construction Management & Quantity Surveying, University of Johannesburg, Doornfontein Campus, Johannesburg, 2028, South Africa
Zakari Mustapha, School of Engineering, Department of Building Technology, Cape Coast Technical University, Cape Coast, Ghana

ID 025 Conceptual Framework to Estimate Continuous Improvement Project Success in Hospitals

Fernando Gonzalez-Aleu, Department of Engineering, Universidad de Monterrey, San Pedro Garza García, NL 66238, Mexico
Eileen M. Van Aken, Grado Department of Industrial and Systems Engineering, Virginia Tech, Blacksburg, VA 24061, USA
Jennifer Cross, Department of Industrial Engineering, Texas Tech University, Lubbock, TX 79409-3061, USA
Wiljeana Glover, Schlesinger Fund for Global Healthcare Entrepreneurship, Babson College, Babson Park, MA 02457-0310, USA

ID 026 Process Standardization: Process Improvement in the Inbound Logistics Department of An Aquaculture Manufacturing Firm

John Paolo Isip, La Consolacion University Philippines, Philippines
Hazel Caparas, Bulacan State University, Philippines

ID 027 Ethical Leaderships and Organizational Culture of Student Organization at Indonesian Private University

Mahendra Fakhri, Mahir Pradana and Dita Puri Utami, Telkom University, Jalan Terusan Buah Batu, Bandung, 40257, Indonesia

ID 028 Degradation of Water Hyacinth (Eichhornia Crassipes) to Vermicompost through Application of the Vermicomposting Technology

Mercy M. Manyuchi and Charles. Mbohwa, Department of Operations and Quality Management, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa
Edison. Muzenda, Department of Chemical Engineering Technology, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa
Department of Chemical, Materials and Metallurgical Engineering, Faculty of Engineering and Technology, Botswana International University of Science and Technology, P Bag 16, Palapye, Botswana
Trevor. N. Mutusva, Department of Mathematical Sciences, School of Industrial Sciences and Technology, Harare Institute of Technology, Zimbabwe
Miranda Mpeta, Department of Environmental Engineering, Faculty of Engineering, Chinhoyi University of Technology, Zimbabwe

ID 029 The Application of Lean Manufacturing to Reduce Setup Time of a Printing Process

Kasarin Chivatxaranukul, Aeronautic Engineering, Vincent Mary School of Engineering, Assumption University, Thailand

ID 030 Combination of Tolerances of False Causes of Failure in Neuro psychotics Structures of the prediction for the Reliability of Refurbished Systems

Fereidoun Heidari Takabi, Maintenance and methods Department, South pars gas complex, Asaluye, Iran

ID 031 Vision Guided Robotics Research Study

Annamalai Pandian and Kyle Bruce, Mechanical Engineering Department, Saginaw Valley State University, University Center, MI 48710, USA

ID 032 An Improved Malaysian Automotive Industry Resin Supply Chain Framework

Rosdan Bin Rosman and Sha'ri Mohd. Yusof, Razak Faculty of Technology & Informatics, Universiti Teknologi Malaysia, Jalan Semarak, Malaysia

ID 033 Customer Churn Prediction Using a New Criterion and Data Mining; A Case Study of Iranian Banking Industry

Davoud Gholamiangonabadi and Jamal Shahrabi, Department of Industrial Engineering and Management Systems, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
Seyed Mohamad Hosseinioun, Industrial and Systems Engineering Department, Northern Illinois University, Chicago, USA
Sanaz Nakhodchi, Department of Computer Engineering, Iran University of Science and Technology, Tehran, Iran
Soma Gholamveisy, Department of Industrial Engineering, Islamic Azad University (South Tehran Branch), Tehran, Iran

ID 034 A Study of the Owners Related Factors affecting the Performance of Tertiary Educational Building (TEB) Projects

Adedokun and Olufisayo Adewumi, Department of Quantity Surveying, School of Environmental Technology, Federal University of Technology, Akure, Nigeria

ID 038 Application of Lean Manufacturing Concepts in Production System

Muhammad Umair Furqan, Surgicon Pvt. Ltd, Lahore, Punjab, Pakistan

ID 039 Reasoning Types in An Industrial Engineering/Operations Management

Muhittin Oral, Graduate School of Business, Özyeğin University, Istanbul, Turkey
Ossama Kettani, Modellium, Inc., Centre Ville, Québec City, Canada

ID 040 Device Design For SAE 1020 Steel Tool Storage Applied To Automotive Industry

Marcílio Antunes Leite Filho, Rosinei Batista Ribeiro, Adriano José Sorbile de Souza, José Wilson de Jesus Silva and Wellington de Oliveira, Post-Graduation Program in Design, Technology and Innovation, Lorena, UNIFATEA, Brazil

ID 041 Mining Waste Management for Sustainable Mining Practices

M. M. Manyuchi and C. Mbohwa, Department of Operations and Quality Management, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa
E. Muzenda, Department of Chemical Engineering Technology, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa
Department of Chemical, Materials and Metallurgical Engineering, Faculty of Engineering and Technology, Botswana International University of Science and Technology, P Bag 16, Palapye, Botswana

ID 050 Importance of Traceability, quality and safe food for good health of human

Khan Mohammad Elyas and Agriculturist Ripon Kumar Ghose

ID 056 A Quality Control-Based In-process Artificial Neural Network Surface Roughness Prediction System

PoTsang B. Huang, Department of Industrial and Systems Engineering, Chung Yuan Christian University, Taoyuan City, Taiwan
Josephine D. German, Rodalyn O. Mabanag, and Gabrielle Quirino, Department of Industrial Engineering and Service Engineering Management, Mapua Institute of Technology, Manila

ID 061 Time Estimation for Container Handling and Yard Arrangement

Etsuko Nishimura, Graduate School of Maritime Sciences, Kobe University, 5-1-1 Fukae-minami, Higashinada, Kobe 658-0022, JAPAN

ID 062 Application of Hyperbinomial Distribution in Developing a Modified p-chart

Shourav Ahmed, Gulam Kibria and Kais Zaman, Industrial and Production Engineering, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

ID 063 Modelling for Hospital Rating Improvements on peer review sites considering region specific factors

Mayukh Saha, Dr. Jitendra Kumar Jha and Dr. J Maiti, Department of Industrial & Systems Engineering, Indian Institute of Technology, Kharagpur,

721302, India

ID 064 Potential to use Bio char in Mercury Removal from Gold Mining Tailings Wastewater

M. M. Manyuchi and C. Mbohwa, Department of Operations and Quality Management, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa

E. Muzenda, Department of Chemical Engineering Technology, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa

Department of Chemical, Materials and Metallurgical Engineering, Faculty of Engineering and Technology, Botswana International University of Science and Technology, P Bag 16, Palapye, Botswana

ID 065 Process of Recovering Diesel from Waste Plastics: A Review

Ignatio Madanhire, Simon Chinguwa and Nyahunda Liberty, Department of Mechanical Engineering, University of Zimbabwe, P.O Box MP167, Mount Pleasant, Harare, Zimbabwe

Charles Mbohwa, Department of Quality Management and Operations Management, University of Johannesburg, P. O. Box 524, Auckland Park 2006, Johannesburg, South Africa

ID 066 E-Waste Recycling to Recover Base and Precious Metals

Ignatio Madanhire and Liberty Nyahunda, Department of Mechanical Engineering, University of Zimbabwe, P.O Box MP167, Mount Pleasant, Harare, Zimbabwe

Simon Chinguwa and Charles Mbohwa, Department of Quality Management and Operations Management, University of Johannesburg, P. O. Box 524, Auckland Park 2006, Johannesburg, South Africa

ID 067 Development of Mechanical Solar Tracker Design

Ignatio Madanhire, Tauyanashe Chikuku and Liberty Nyahunda, Department of Mechanical Engineering, University of Zimbabwe, P.O Box MP167, Mount Pleasant, Harare, Zimbabwe

Charles Mbohwa, Department of Quality Management and Operations Management, University of Johannesburg, P. O. Box 524, Auckland Park 2006, Johannesburg, South Africa

ID 068 Models and Metaheuristics for the Pollution Traveling Salesman Problem

Paolo Toth, Valentina Cacchiani and Carlos Contreras-Bolton, DEI, University of Bologna, Viale Risorgimento 2, 40136 Bologna, Italy

John W. Escobar, Pontificia Universidad Javeriana, Cl. 18 #118-250, Cali, Colombia

Luis M. Escobar-Falcon, Technological University of Pereira, Cl. 27 #10-02 Barrio A´lamos, Pereira, Colombia

Rodrigo Linfati, University of Bio Bio, Av. Collao 1202, Concepcion, Chile

ID 069 A Risk Management Based Econometric Modelling of Insurance Underwriting in Engineering Projects

Engr. Ronwaldo J. Reyes and Marvin I. Noroña, School of Industrial Engineering and Engineering Management, Mapua University, 658 Muralla Street, Intramuros, Manila, Philippines

ID 070 Customer visit segmentation in an online retail market

Partha Sarathi Mishra and Dr. Jitendra Kumar Jha, Department of Industrial and Systems Engineering, Indian Institute of Technology, Kharagpur, 721302, India

ID 071 A Dual Approach to the Harmonized Model between Inventory Reduction and Heijyunka (Production Leveling) Based on the Minimum Average-Energy Principle

Tsuyoshi Kurihara, Certified and Accredited Meteorologist, Hiroshima, Japan

Takaaki Kawanaka, Institute for Innovation in International Engineering Education, Graduate School of Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo, Japan

Hiroshi Yamashita, Department of Commerce, Meiji University, 1-1 Kanda-Surugadai, Chiyoda-ku, Tokyo, Japan

ID 072 Ranking of the Factors for Resilient Humanitarian Supply Chain: A TOPSIS Approach

Rajesh Kr Singh, Management Development Institute, Gurgaon, India

Ayush Gupta, Production and Quantitative Methods Area, Indian Institute of Management Ahmedabad, Ahmedabad, India

ID 073 Virtual DNA (V-DNA) Applications: A Systematic Literature Review

Alaa M. Ubaid and Fikri T. Dweiri, College of Engineering, University of Sharjah, University City, Sharjah, UAE

ID 074 Including Containers with Dangerous Goods in the Slot Planning Problem

Kiros Gebrearegawi Kebedow, School of Mathematical and Statistical Sciences, Hawassa University, Hawassa, Ethiopia

Johan Oppen, Molde University College, Specialized University in Logistics, Molde, Norway

ID 075 Excellent Performance Realization Methodologies (EPRMs): Elements and Framework

Alaa M. Ubaid and Fikri T. Dweiri, College of Engineering, University of Sharjah, University City, Sharjah, UAE

ID 076 An Employee Retention Model for Millennials in the Philippine Telco Industry

John Jerjie C. Reyes and Marvin I. Norona, School of Industrial Engineering and Engineering Management, Mapua University, Manila City, Philippines

ID 078 Heuristic Approaches for Optimizing Multi-echelon Multi-facility Green Reverse Logistics Network Design

K Nageswara Reddy, Akhilesh Kumar, Department of Industrial and Systems engineering, Indian Institute of Technology, Kharagpur, West Bengal, India, 721302

ID 079 Work-related psychosocial factors associated with lower back pain among male handicraft workers in Jaipur, India

Dipayan Das, Awadhesh Kumar and Monica Sharma, Department of Mechanical Engineering, Malaviya National Institute of Technology, Jaipur, Rajasthan, India

ID 080 The Improvement of Healthcare Management in Thailand via IE Tools: A Survey

Chawis Boonmee and Chompoonoot Kasemset, Department of Industrial Engineering, Chiang Mai University, Chiang Mai, Thailand

ID 081 Collision Probability Analysis in a Parallel Machines Model When the Number of Jobs Is Constrained

Taiki Otsuka and Eishi Chiba, Department of Industrial and Systems Engineering, Hosei University, 3-7-2 Kajino-cho, Koganei-shi, Tokyo, 184-8584 Japan

ID 082 A Conceptual Framework Of Multi Objective Optimization For International Perishable Food Supply Chain Under Stochastic Demand And Fuzzy Deterioration Rate

Samatthachai Yamsa-ard, Department of Research, NEOMA Business School, Mont Saint Aignan, 76130, France
Fouad Ben Abdelaziz, Department of Information systems, Supply chain management and Decision-making, NEOMA Business School, Mont Saint Aignan, 76130, France

ID 083 A Three Stage DEA Approach for Evaluating the Performance of Supply Chains: Case Study of Public Pharmaceutical Products Supply chains in Morocco

Zoubida Chorfi and Abdelaziz Berrado, Equipe Analyse, modélisation et intégration des processus et systèmes (EAMIPS), Ecole Mohammadia d'Ingénieurs, Mohammed V University of Rabat, Morocco
Loubna Benabbou, Département Sciences de la Gestion, Université du Québec à Rimouski (UQAR), Campus de Lévis, Québec, Canada

ID 084 Sustainable Biodegradable Packaging Material: A Solution for Decreasing Available Capacity of Landfills in the Philippines

Juan Miguel N. Dinglasan, Industrial Engineering Department, Technological Institute of the Philippines, Quezon City, Philippines

ID 085 Theoretical Framework to Analyze Conflict between Marketing and Operations Strategy: A Product Life Cycle Perspective

Chitresh Kumar and Anirban Ganguly, Jindal Global Business School, O. P. Jindal Global University, Sonipat, Haryana 131001, India

ID 086 Production Optimization of Small – Sized Sugarcane Farms in the Philippines through Optimal Variety Mix using Compromise Programming

Alec Steven L. Ardan, John Ruther A. Faustino, Mariel Jorinda G. Garcia, Patrick Jerome M. Lacap, Marc Jesm Malapitan, Julius C. Palagam, John Rowe V. Pineda and Romalyn L. Galingan, Department of Industrial Engineering, Technological Institute of the Philippines, Quezon City Philippines

ID 087 Banana Peel for the Decontamination of Mercury in Water

Gerardo Espinosa, Jacobo Tijerina, Natella Antonyan and Imelda Loera, Universidad de Monterrey, San Pedro Garza García, Nuevo León, Mexico

ID 088 Particle Swarm Optimization for Post Box Collection Routing Problem

Warisa Wisittipanich, Excellent Center in Logistics and Supply Chain Management, Department of Industrial Engineering, Faculty of Engineering, Chiang Mai University, Chiang Mai 50200, Thailand
Kritsada Ananthapanyasut, Department of Industrial Engineering, Faculty of Engineering, Chiang Mai University, Chiang Mai 50200, Thailand

ID 089 DeepFork: Supervised Prediction of Info Diffusion

Ramya Akula, Niloofar Yousefi and Ivan Garibay, Industrial Engineering and Management Systems, University of Central Florida, syedOrlando, USA

ID 090 Formulation of a Remover to Eliminate Paint in Articles Made of Glass

Gerardo Espinosa and Jacobo Tijerina, Universidad de Monterrey, Mexico

Natella Antonyan and Imelda Loera, Tecnologico de Monterrey, Mexico

ID 091 Critical Success Factors for the implementation of Operational Excellence

Jacobo Tijerina Aguilera and Diego Andrés Martínez Treviño, Extension, Consulting and Research Department, University of Monterrey, Monterrey, Nuevo León 66238, Mexico

ID 092 A classification of transport mode on a smartphone based on a neural network

Taku Tanichi, Advanced Course in Production Systems Engineering, Salesian Polytechnic Machida, Tokyo 194-0215, Japan
Yoichi Shimakawa, Department of Computer Science and Technology, Salesian Polytechnic Machida, Tokyo 194-0215, Japan

ID 093 A study on a routing problem focusing on freight transportations

Tatsuya Komiya, Advanced Course in Production Systems Engineering, Salesian Polytechnic Machida, Tokyo 194-0215, Japan
Yoichi Shimakawa, Department of Computer Science and Technology, Salesian Polytechnic Machida, Tokyo 194-0215, Japan
Hiroyuki Goto, Department of Industrial & System Engineering, Hosei University Tokyo, Japan

ID 094 Assessment of accessibility to a facility using a Geographic Information System: Case study of a food desert problem in a suburban area of Tokyo

Shun Odahara, Advanced Course in Production Systems Engineering, Salesian Polytechnic Machida, Tokyo 194-0215, Japan
Yoichi Shimakawa, Department of Computer Science and Technology, Salesian Polytechnic Machida, Tokyo 194-0215, Japan

ID 095 Risk Exposure and Factor Effect Study of Selected Car Accident Parameters on Accident Severity

Khalid Alzoubi, Department of Industrial Engineering, Jordan University of Science and Technology, P.O. Box 3030, Irbid 22110, Jordan
Sharaf Alkheder, Department of Civil Engineering, Kuwait University, P.O. Box 5969, Safat 13060, Kuwait

ID 096 Advanced preservation policy for deteriorating products during transportation and at retailer within a supply chain

Muhammad Waqas Iqbal and Yuncheol Kang, Department of Industrial Engineering, Hongik University, Seoul, South Korea

ID 097 The Development of the Maturity Model to evaluate the Smart SMEs 4.0 Readiness

Nilubon Chonsawat, Ph.D.'s Degree Program in Industrial Engineering, Department of Industrial Engineering, Faculty of Engineering, Chiang Mai University, Chiang Mai 50200, Thailand
Apichat Sopadang, Department of Industrial Engineering, Excellent Center in Logistics and Supply Chain Management, Chiang Mai University, Chiang Mai 50200, Thailand

ID 098 Customer Churn Prediction Using a Meta-Classifier Approach; A Case Study of Iranian Banking Industry

Davoud Gholamiangonabadi and Adele Shahi, Department of Industrial Engineering and Management System, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
Sanaz Nakhodchi, Department of Computer Engineering, Iran University of Science and Technology, Tehran, Iran
Ammar Jalalimanesh, Iranian Research Institute for Information Science and Technology (IRANDOC), Tehran, Iran

ID 099 Assessing productivity changes using the bootstrapped Malmquist index: the case study of the Iranian construction industry

Alireza Nabavieh, Kaveh M. Cyrus and Davoud Gholamiangonabadi, Department of Industrial Engineering and Management Systems, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
Soma Gholamveisy, Department of Industrial Engineering, Islamic Azad University (South Tehran Branch), Tehran, Iran

ID 100 Sustainability Framework for Farm Level Cotton Supply Chain Management

Sonia Nazeer and Puwanart Fuggate, School of Logistic and Supply Chain, Naresuan University, Phitsanulok, Thailand

ID 101 Dehydration And Sieving to 150 Microns Process of Melon Seed

Gerardo Espinosa Garza and Jacobo Tijerina Aguilera, Extension, Consulting and Research Division, Universidad de Monterrey, Av. Ignacio Morones Prieto 4500 Pte., San Pedro Garza Garcia, N.L., 66238, Mexico
Natella Antonyan and Imelda Loera Hernandez, Escuela de Ingenieria y Ciencias, Tecnologico de Monterrey, G. Sada 2501, Monterrey, N.L., 64849, Mexico

ID 109 Cost Oriented Failure Consequence Analysis of Machine Components- A Case Study

Pratik Nandanwar and Dr. Pravin P. Tambe, Department of Industrial Engineering, Shri Ramdeobaba College of Engineering & Management, Nagpur, India

ID 110 Managing Production and Sales of Refurbished Products under Capacity Limitations

Mayukh Saha, Vaibhav Agrawal and Dr. Akhilesh Kumar, Department of Industrial and Systems Engineering, Indian Institute of Technology, Kharagpur, West Bengal, India

ID 111 Location model minimizing distances between EV charging stations

Yohei Kakimoto, Graduate School of Science and Engineering, Hosei University, Tokyo, Japan

Hiroyuki Goto, Department of Industrial & System Engineering, Hosei University Tokyo, Japan

Yoichi Shimakawa, Department of Computer Science and Technology, Salesian Polytechnic Machida, Tokyo, Japan

Prommas Panote, Graduate School of Science and Engineering, Hosei University, Tokyo, Japan

ID 112 Fleet management through Vehicle Routing Problem and Multi Depot Vehicle Scheduling Problem: A Literature Review

Ziyad bahou, Equipe MOAD6, Mohammadia School of Engineers, Mohammed V University of Rabat, Morocco

Jamal Elhachmi, Laboratory of Electronics and Telecommunications, Mohammadia School of Engineers (EMI), Rabat, Morocco

ID 113 Decrease Scrap of Railroader Axle on Carajás Railroad

Francisco das Chagas Barbosa Nascimento, Reliableness of Wagon Maintenance Management, Carajás Railroad to VALE S.A., Av. dos Portugueses, S/N Anjo da Guarda, CEP 65085 580 São Luís, MA – Brasil

Gerisval Pessoa, North Carrier Capacity and Operational Process of Management, Executive Management of Maintenance Engineering EFC VALE S.A., Av. dos Portugueses, S/N Itaqui, CEP 65085 580 São Luís, MA – Brasil

ID 114 Success Factors for ERP Implementation: a Systematic Literature Review

Mohamed-Iliasse Mahraz and Abdelaziz Berrado, Département Génie industriel, Ecole Mohammadia d'Ingénieurs, Mohammed V University of Rabat, Loubna Benabbou, Département Sciences de la Gestion, Université du Québec à, Rimouski (UQAR) Campus de Lévis, Québec Morocco

ID 115 Optimisation of Distribution System in the Retail Industry: An Australian Retail Industry

Mohammad Amjad, Faculty of Engineering and Information Technology, University of Technology Sydney, NSW 2007, Australia

Jay Daniel, Derby Business School, University of Derby, Derby, DE22 1GB, UK

Jose Arturo Garza-Reyes, Centre for Supply Chain Improvement, University of Derby, Derby, DE22 1GB, UK

ID 117 Redesign of the Raw Material Collection System for the Reduction of the Integrated Total Costs by Ton in a Steel Company

Carlos Perez Sandi Treviño and Luis Enrique Orozco Rubio, Engineering and Technologies Department, University of Monterrey, San Pedro Garza García, NL 66238, México

Jenny Díaz Ramírez, Engineering and Technologies Department, University of Monterrey, Nuevo León, México

ID 119 A Drivers' Performance Assessment Model Based on Fuel Economy Measurements

Jenny Díaz Ramírez, Department of Engineering, Universidad de Monterrey, Monterrey, N.L. 66238, Mexico

José Ignacio Huertas, Energy and Climate Change Research Group, School of Engineering and Science, Tecnologico de Monterrrey, Monterrey, N.L., 68849, México

ID 120 Aerospace Industry in Queretaro, Mexico: A perspective of Regional Innovation System

Christian Muñoz-Sanchez, María del Rocio Soto-Flores and Luis Rocha-Lona, Business School, National Polytechnic Institute of Mexico, Mexico City, Mexico

Jose Arturo Garza-Reyes, Centre for Supply Chain Improvement, The University of Derby, Derby, UK

ID 121 A Literature Review and Further Research Direction in Cross-docking

Dollaya Buakum, Graduate Program in Industrial Engineering, Department of Industrial Engineering, Faculty of Engineering, Chiang Mai University, Chiang Mai 50200, Thailand

Warisa Wisittipanich, Excellent Center in Logistics and Supply Chain Management, Department of Industrial Engineering, Faculty of Engineering, Chiang Mai University, Chiang Mai 50200, Thailand

ID 122 A methodology for combined maintenance decision with quality control and production scheduling for multi machine system

Dr. Pravin P. Tambe, Department of Industrial Engineering, Shri Ramdeobaba College of Engineering & Management, Nagpur, India

Dr. Makarand S. Kulkarni, Department of Mechanical Engineering, Indian Institute of Technology Bombay, Powai, Mumbai, India

ID 123 Study on the Classification of Network

Shoichi Kaneko, Faculty of Management Information, Yamanashi Gakuin University, 2-4-5 Sakaori, Kofu city, Yamanashi, Japan

Takaaki Kawanaka, Institute for Innovation in International Engineering Education, Graduate School of Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo, Japan

Nyunho Jung, Faculty of Business, Aichi Shukutoku University, 23, Sakuragaoka, Chikusa-ku, Nagoya-city, Aichi Prefecture, Japan

Hiroshi Yamashita, Department of Commerce, Meiji University, 1-1 Kanda-Surugadai, Chiyoda-ku, Tokyo, Japan

Masanobu Matsumaru, Mechanical and Industrial Engineering Department, Kanagawa University, Kanagawa, Japan

ID 132 A Study of the Design for Trolley School Bag of Elementary Children in Grades 1-3 Using the NIOSH Lifting Equation

Christian T. Chua, Glyda A. Marquez and Tyrine B. Mendez, Industrial Engineering Department, Technological Institute of the Philippines, Quiapo

Metro Manila, Philippines

Janina Elyse A. Reyes, Industrial Engineering Department, Technological Institute of the Philippines, Quiapo Metro Manila, Philippines

ID 133 A Study of the Design for Trolley School Bag of Elementary Children in Grades 1-3 Using the National Institute for Occupational Safety and Health (NIOSH) Lifting Equation

Christian T. Chua, Glyda A. Marquez and Tyrine B. Mendez, Industrial Engineering Department, Technological Institute of the Philippines, Quiapo Metro Manila, Philippines

Janina Elyse A. Reyes, Industrial Engineering Department, Technological Institute of the Philippines, Quiapo Metro Manila, Philippines

ID 134 Hypothesis Combination using Genetic Algorithm

Kuan-Yu Lai, Jhin-Wun Wang and Chien-Liang Liu, Department of Industrial Engineering and Management, National Chiao Tung University, 1001 University Road, Hsinchu, Taiwan 300, ROC

ID 135 Multiperiod Reliable Uncapacitated Facility Location Problem

Megha Sharma and Sumanta Basu, Operations Management Group, Indian Institute of Management Calcutta, Kolkata, India

Arnab Adhikari, Operations Management Department, Indian Institute of Management Ranchi, Ranchi, India

ID 136 Proposal of k-principal points for Binary Data by Introducing a Dendrogram

Sunhee Kwon, Graduate School of Business Administration, Meiji University, Tokyo, Japan

Takaaki Kawanaka, Institute for Innovation in International Engineering Education, Graduate School of Engineering, The University of Tokyo, Tokyo, Japan

Hiroshi Yamashita, Department of Commerce, Meiji University, 1-1 Kanda-Surugadai, Chiyoda-ku, Tokyo, Japan

ID 137 Factors Affecting the Performance of Cold Chain for Export of Thailand's Longan

Narathip Titlo, Graduate program in Logistics Engineering and Supply chain Management, Department of Industrial Engineering, Chiang Mai University, Chiang Mai, Thailand

Apichat Sopadang, Department of Industrial Engineering, Excellence Center in Logistics and Supply Chain Management, Chiang Mai University, Chiang Mai, Thailand

ID 138 Review on Heat Transfer Enhancement in Car Radiator Using Nano Fluids

Nandkumar Sadashiv Vele, Research Scholar, RSCOE, Savitribai Phule Pune University, Pune, India

Prof (Dr.) R. K. Patil, Principal Government Polytechnic College, Hingoli, Maharashtra State, India

ID 139 Deviation degree between ideal and real of domain transition probability in resource circulation considering production synchronization ratio

Takaaki Kawanaka, Institute for Innovation in International Engineering Education, Graduate School of Engineering, The University of Tokyo, Tokyo, Japan

Hiroshi Yamashita, Department of Commerce, Meiji University, 1-1 Kanda-Surugadai, Chiyoda-ku, Tokyo, Japan

Shoichi Kaneko, Faculty of Management Information, Yamanashi Gakuin University, 2-4-5 Sakaori, Kofu city, Yamanashi, Japan

ID 140 Design and Analysis of Ducted Wind Turbine for Rooftop Installation

Agney Bhakare, Preeti Ranka and Anket Telkapalliwar, B.Tech. in Mechanical Engineering, Veermata Jijabai Technological Institute, Mumbai, 400019, INDIA

Mandar. V. Tendolkar, Assistant Professor, Mechanical Engineering Department, Veermata Jijabai Technological Institute, Mumbai, 400019, INDIA

Sanjay M. G., Associate Professor, Mechanical Engineering Department, Veermata Jijabai Technological Institute, Mumbai, 400019, INDIA

ID 141 How the difference in product characteristics affects the relationship with customers? In the case of the electronics parts industry increasing its focus on the automotive market

Chihiro Sato, Graduate School of Economics and Management, Tohoku University, Kawauchi, 27-1, Aoba-ku, Sendai, Miyagi, Japan

ID 142 Lean Readiness Assessment Model – A Tool for Humanitarian Organizations' Social and Economic Sustainability

Muhammad Shafiq and Kullapa Soratana, School of Logistics and Supply Chain, Naresuan University, Phitsanulok 65000, Thailand

ID 143 An Investigation of Student Perspective for E-Learning Readiness Measurement

Aulia F. Hadining, Sukanta and Wachid Hidayat, Industrial Engineering Department, State University of Singaperbangsa Karawang, Karawang, Indonesia

ID 144 CSR Strategies and Pricing Decisions of Competitive Firms under Uncertainty Demands

Bo Li, College of management and Economics, Tianjin University, Tianjin, China

Junhong Yang, School of Mechanical Engineering, Tianjin University, Tianjin, China

ID 145 Social Determinants of Health: Global Comparison
Sung-Ho Kim, Ph.D., Adjunct Professor at Yonsei University, Korea
Ik-Whan Kwon, Ph.D., Professor Emeritus, Saint Louis University, U.S.A.

ID 146 Designing Pricing Strategy under Environmental-Friendly Promotion and Competition
Sumanta Basu, Operations Management Group, Indian Institute of Management Calcutta, Kolkata, India
Arnab Adhikari, Operations Management Department, Indian Institute of Management Ranchi, Ranchi, India

ID 147 Throughput Rate Calculation by Cycle Time Modeling for Multi Aisles ASRS Using Timed Petri Nets
Yassine Boudghene Stambouli, MELT laboratory, University of Tlemcen, Algeria
Samir Hamacl, Quartz Laboratory (EA 7393), ECAM-EPMI, Cergy-Pontoise, France

ID 148 A Knowledge Management Approach to Compare and Develop the ASEAN University Credit Transfer System in Thailand
Chayamarnie Bhiriyawanit, College of Arts, Media and Technology, Chiang Mai University, Thailand

ID 149 Collaborative Supply Chain in Auto Service in India
Debabrata Bhattacharjee, Country Head, Indian Oil Corporation Limited, Yangon Branch, Myanmar

ID 150 A Workplace Assessment for Visually Impaired and Blind Massage Therapists of a Massage Therapy Franchise in Metro Manila, Philippines
Noriko Hayashi, Januel Ticsay, Krischael Santos and Janne Paula Villaflor, Department of Industrial Engineering, Technological Institute of the Philippines, Manila, Philippines

ID 151 City Carbon Footprint Adaptation on Green Supply Chain and Logistics of Food Production and Consumption
Kunlatida Yachai, Graduate program in Logistics Engineering and Supply chain Management, Department of Industrial Engineering, Chiang Mai University, Chiang Mai, Thailand
Sate Sampattagul, Department of Industrial Engineering, Center of Excellent on Energy, Economic and Ecological Management (3E), Chiang Mai University, Chiang Mai, Thailand

ID 152 Decontamination of mercury, cadmium and lead
Gerardo Espinosa Garza, Universidad de Monterrey, Monterrey, Nuevo León, México
Pamela Espinosa Alonso, Blanca Nelly Fabela Guardado, Laura Citlali Flores Martínez, Katia Margarita Martínez López and Ana Laura Ochoa Tovar, María Cristina Rendón Lara and Jesús Salvador Sánchez Miñón, Tecnologico de Monterrey, Mexico

ID 153 Green Manufacturing Adoption Framework for Small and Medium Enterprises in Indonesia
Ira Setyaningsih, Universitas Gadjah Mada, UIN Sunan Kalijaga Yogyakarta, Yogyakarta, Indonesia

ID 154 A Markovian Perspective of Airport Departure Process
Ch V Sai Praveen and Mayank Anand, Department of Mechanical Engineering, Indian Institute of Technology, Kharagpur, West Bengal, India

ID 155 Systems Thinking View on Impact of Single Common Tax on Warehousing Industries in India
Priyankshu Mukhopadhya, Shreeya Shahu and Dr. Pravin P. Tambe, Department of Industrial Engineering, Shri Ramdeobaba College of Engineering and Management, Nagpur, Maharashtra 440013, India

ID 156 Mercury, Cadmium and Lead Removal from Contaminated Water by Processed Lemon Peel
Gerardo Espinosa Garza, Alba Victoria Sordo Téllez, Cassandra Ibarra Barreda, Sergio García, Emiliano Garza Belden, Juan José de Isla and Michelle Aggeler Castellanos, Universidad de Monterrey, Nuevo León, Mexico

ID 157 Productivity in the use of beer foam
Gerardo Espinosa Garza, Universidad de Monterrey, Monterrey, Nuevo León, México

ID 158 Mercury, Cadmium and Lead Removal by Processed Orange Peel
Gerardo Espinosa Garza, Armando Chávez Flores, Mauricio Casas Zuñiga, Rodrigo Lozano Lozano, Javier Valdez Alatorre, Kevin Hernández Martínez and Daniel Amarante Portill, Universidad de Monterrey, Monterrey, Nuevo León, México

ID 167 An Efficient Storage Allocation in Warehouse to Minimize Travel Distance of Pickers
Md. Saiful Islam, Department of Industrial Engineering and Management, Khulna University of Engineering & Technology, Khulna-9203,

Bangladesh

Md. Kutub Uddin, Department of Mechanical Engineering, Khulna University of Engineering & Technology, Khulna-9203, Bangladesh

ID 168 Implementation of JIT in sewing section of a garment industry in Bangladesh to increase productivity

Israt Parveen, Md. Arif Mia, 1Md. Sujan Ali, Khandoker Rafsun-Ul-Hasan, Md. Moshiur Rahman and Md. Iqbal Mahmud, Department of Textile Engineering, Mawlana Bhashani Science and Technology University, Santosh, Tangail-1902, Bangladesh
Haeng Muk Cho, Department of Mechanical Engineering, Kongju National University, Chungcheongnam-do, South Korea

ID 169 Chemical cleansing process for pipelines with servomechanisms

Gerardo Espinosa Garza, Universidad de Monterrey, Monterrey, Nuevo León, México

ID 170 locating an Urban Distribution Center based on Road Safety

Maha BENNANI, MGSI/ LPEDD, Fes, Morocco

ID 171 TCSC Integration in National Transmission system of Pakistan to enhance transmission capability: A case study of Hub Jamshoro Section

Mukhtiar Ahmed Mahar, Abdul Sattar Larik and Irfan Ahmed Bajkani, Department of Electrical Engineering, Mehran University of Engineering and Technology, SZAB Campus, Khaipur Mirs, Pakistan

ID 173 Information Systems for Industrial processes support and optimization

Teresa Pereira, Research Center of Mechanical Engineering (CIDEM), Institute of Engineering of Porto of Polytechnic Institute of Porto, ISEP/P.Porto, Rua Dr. António Bernardino de Almeida, 431, 4200-072, Porto, Portugal
Fernanda A. Ferreira, Applied Management Research Unit (UNIAG), School of Hospitality and Tourism of Polytechnic Institute of Porto, Rua D. Sancho I, 981 4480-876, Vila do Conde, Portugal
André Silva, Mechanical Engineering Master Student, Institute of Engineering of Porto of Polytechnic Institute of Porto, ISEP/P.Porto, Rua Dr. António Bernardino de Almeida, 431, 4200-072, Porto, Portugal

ID 174 Handling Multi-Objective Fuzzy Production Scheduling Problem with Mould Maintenance through Pigeon Inspired Optimization Algorithm

Fu Xiaoyue, Chan Felix T. S. and Chung S. H., Department of Industrial and Systems Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong
Niu Ben, College of Management, Shenzhen University, Shenzhen, China
Qu Ting, School of Electrical and Information Engineering, Jinan University, Guangzhou, China

ID 175 Real-time Fuzzy Control of the Assembly Line

Jiage Huo, Felix T.S. Chan and Carman K.M. Lee, Department of Industrial and Systems Engineering, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong
Jan Ola Strandhagen, Department of Production and Quality Engineering, Norwegian University of Science and Technology, Trondheim, Norway

ID 176 Analysis Forecast Production Model: A Mexican Family Firm Proposal

Gonzalo Maldonado-Guzmán, Centro de Ciencias Económicas y Administrativas, Universidad Autónoma de Aguascalientes, Aguascalientes, Ags., México C.P. 20131
Jose Arturo Garza-Reyes, Centre for Supply Chain Improvement, University of Derby, Derby, DE22 1GB, UK
Lizeth Itziguery Solano-Romo, Centro de Ciencias Básicas, Universidad Autónoma de Aguascalientes, Aguascalientes, Ags., México C.P. 20131

ID 177 The Impact of the Introduction of ISO 9001 Standards – Case of a South African Power Station

Sambil Charles Mukwakungu, Matimba Davis Mabasa, Tebogo Lucky Mamela, Semanga Mabuza and Sihle Mankazana, Department of Quality and Operations Management, University of Johannesburg, Johannesburg, South Africa

ID 178 Feasibility analysis of a reusable material that allows photosynthetically active radiation and avoids high temperatures in greenhouses

Gerardo Espinosa Garza, Universidad de Monterrey, Mexico
Eduardo A. Elizondo Garza, Daniel A. Labastida Gamboa, Arturo Martínez Torres, Jhasua Carlos Reyna and Victor Garcia Vidal, Tecnologico de Monterrey, Mexico

ID 179 Quality Signaling through Crowdfunding Pricing

Ehsan Bolandifar, Hong Kong

ID 188 The Impact of Total Quality Management Practices on Organizational Performance of SMEs in Pakistan

Kamna Anam, Faculty of Management Sciences, Sir Syed CASE Institute of Technology (SSCIT), Islamabad, Pakistan

ID 200 Performance-Based Contracts for Energy Efficiency Projects

Sam Aflaki, HEC Paris – Operations Management and Information Technology

Roman Kapuscinski and Liang Ding, University of Michigan, Stephen M. Ross School of Business

ID 201 Creation of a RFID to improve productivity and Inventory Control

Imelda Loera Hernández and Natella Antonyan, Tecnologico de Monterrey, Monterrey, Nuevo León, México

Gerardo Espinosa Garza and Jacobo Tijerina Aguilera, Universidad de Monterrey, San Pedro Garza García, Nuevo León, México

ID 202 Operational Excellence: Concept Review and Meaning Restructuration

Jacobo Tijerina Aguilera & Nancy Lucero Tapia Ruíz, Universidad de Monterrey, San Pedro Garza García, Nuevo León, México

ID 203 Performance and Optimization of Service Rates & Servers for Closed Finite Queueing Systems

L. Kerbache, Department of Information Systems and Operations Management, HEC Paris, France

J. MacGregor Smith, Department of Mechanical and Industrial Engineering, University of Massachusetts at Amherst, Massachusetts 01003, USA

ID 204 Comparison between Hadoop and Spark

Houssam Benbrahim, Hanaâ Hachimi and Aouatif Amine, Systems Engineering Laboratory, BOSS-Team, National School of Applied Sciences, Ibn Tofail University, Kenitra, Morocco

ID 205 Are EGGS what you actually think: Here's something interesting you might have no idea!

Mrs. Priya Sachin Deole, Department of physics, G.S. Tompe Art's, Comm. & Science College, Chandur Bazar, Dist. Amravati (M.S) India

Mr. Nachiket Sachin Deole and Mrs. Manasi Vyankatesh Ghamande, Department of Engineering Sciences and Humanities, Savitribai Phule University, Pune, India

ID 206 Creating a KPI Tree for Monitoring and Controlling Key Business Objectives of First Mile Logistics Services

Sudipto Dasgupta, Specialist – Supply Chain Design, Flipkart Internet Pvt. Ltd., Bangalore, India

Sarvartha Kanchan, Director – Supply Chain Design, Flipkart Internet Pvt. Ltd., Bangalore, India

Tridev Kundu, Senior Manager – Supply Chain Design, Flipkart Internet Pvt. Ltd., Bangalore, India

ID 216 How Sustainable is Short Food Supply Chains? A Comprehensive Systematic Review

Vikas Kumar, Meng Wang and Archana Kumari, Bristol Business School, University of the West of England, Bristol, UK

Supalak Akkaranggoon, Khon Kaen University, Nong Khai, Thailand

Jose Arturo Garza-Reyes, Centre for Supply Chain Improvement, University of Derby, Derby, UK

Daiane Neutzling, Universidade de Fortaleza, Fortaleza, Brazil

ID 217 The Role of Program Advisory Board in Elevating the Degree Program Content

Albertus Retnanto, Ph.D., Petroleum Engineering, Texas A&M University at Qatar, Doha, Qatar

Hamid R. Parsaei, Ph.D., P.E., Mechanical Engineering, Texas A&M University at Qatar, Doha, Qatar

Boback Parsaei, Integrated Technology Systems, Inc., Houston, Texas

ID 222 Foreign Exchange Risk Sharing Arrangement and Optimal Inventory Ordering Policies

Suresha Kharvi, Mangalore University Mangalagangotri574199, India

T. P.M. Pakkala, Justice K S Hegde Institute of Management, Nitte, Karnataka, India

G. Srinivasan, Faculty of Administration, University of Brunswick, Canada

ID 223 Budget Allocation Model for Public Senior High School Academic Programs

Rene D. Estember and Chrystalline Gale Y. Calvez, School of Industrial Engineering and Engineering Management, Mapua University, Manila, Philippines

ID 224 Design and Simulation Based Validation of a Reconfigurable Manufacturing System

Bashir Salah, Industrial Engineering Department, College of Engineering, King Saud University, P.O. Box 800, 11421, Riyadh, Saudi Arabia

ID 225 Assessment of Health and Safety Issues in a Manufacturing Industry

Munim Shaukat, UMT, Lahore, Punjab, Pakistan

ID 226 Musculoskeletal risk assessment among the male workers engaged in craft sectors of Jaipur, India

Ashish Kumar Singh, Makkhan Lal Meena and Himanshu Chaudhary, Department of Mechanical Engineering, Malaviya National Institute of Technology, Jaipur, Rajasthan 302017, India

ID 232 Time Driven Activity Based Costing in Outpatient Logistics

Kakrona Din and Duangpun Kritchanchai, Department of Industrial Engineering, Mahidol University, Nakhon Pathom, Thailand
Atchara Dokkulab, Ramathibodi Hospital, Bangkok, Thailand

ID 233 Applying a genetic algorithm to a signboard layout problem based on a flow captured location-allocation problem

Nozomi Yoshimura, Gaku Miyai and Yoichi Shimakawa, Department of Computer Science and Technology, Salesian Polytechnic Machida, Tokyo 194-0215, Japan

ID 234 Application of Value Stream Mapping to Improve Financial Performance of a Production Floor: a Case Study

Subrata Talapatra and Jannatul Shefa, Department of Industrial Engineering and Management, Khulna University of Engineering & Technology, Khulna, Bangladesh

ID 235 Development of an Online Blood Management System

Subrata Talapatra, Assistant Professor, Department of Industrial Engineering and Management, Khulna University of Engineering & Technology, Khulna, Bangladesh
Raihanul Kabir, Department of Industrial Engineering and Management, Khulna University of Engineering & Technology, Khulna, Bangladesh
Akash Shingha Bappy, Department of Electronics and Communication Engineering, Khulna University of Engineering & Technology, Khulna, Bangladesh

ID 236 A Train Cabin Design for Persons with Mobility Impairment and Special Needs: An Ergonomic Intervention

Ma. Janice J. Gumasing, Marion Ollie V. Zerrudo and Josephine D. German, School of Industrial Engineering and Engineering Management, Mapua University

ID 237 Logistic Strategy to Face Disruption in Freight Multimodal Transportation Network

Erly Ekayanti Rosyida, Doctoral Student at Department of Industrial Engineering, Institut Teknologi Sepuluh Nopember Surabaya, Indonesia
Universitas Islam Majapahit, Mojokerto, East Java, Indonesia
Budi Santosa and I Nyoman Pujawan, Department of Industrial Engineering, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia

ID 238 A Cross-Sectional Study on Occupational Risk Factors of BPO Agents in the Philippines

Ma. Janice J. Gumasing and Jennifer G. Ilagan, School of Industrial Engineering and Engineering Management, Mapua University, Intramuros, Manila 1002, Philippines

ID 239 A method to ensure IE Standards, Capacity Planning and Actual Measurement in perfect synchronization for right investment decision

Lim Chun Pei and Lim Ming Siong, Infineon Technologies (Malaysia) Sdn. Bhd., Malacca 75350, Malaysia
Tang Ho Hwa, Infineon Technologies Asia Pacific Pte. Ltd., 349253, Singapore

ID 240 Requirement Analysis for SMART Supply Chain Management for SMEs

Poti Chaopaisarn, Center of Excellence in Logistics and Supply Chain Management, Chiang Mai University, Chiang Mai, Thailand
Manuel Woschank, Chair of Industrial Logistics, University of Leoben, Leoben, Austria

ID 241 Field study to identify requirements for smart logistics of European, US and Asian SMEs

Patrick Dallasega, Industrial Automation and Engineering (IEA), Faculty of Science and Technology, Free University of Bozen-Bolzano, Piazza Università 5, 39100 Bolzano, Italy
Manuel Woschank, Chair of Industrial Logistics, University of Leoben, Erzherzog-Johann-Strasse 3/1, A-8700 Leoben, Austria
Sakgasem Ramingwong, Korrakot Yaibuathet Tippayawong and Nilubon Chonsawat, Center of Excellence in Logistics and Supply Chain Management, Chiang Mai University, Thailand

ID 242 Governance reform of Moroccan Urban Public Transport sector: Current state, challenges and perspectives

Zehmed Karim and Jawab Fouad, High School of Technology (HST), Sidi Mohamed Ben Abdellah University (SMBAU), PB 2427 Imouzzer Road 30000, Fez, Morocco

ID 243 A Best Practice Reference Model for Agricultural Supply Chain for Rice

W.M.S.K. Weerabahu and L.D.J.F. Nanayakkara, Department of Industrial Management, Faculty of Science, University of Kelaniya, Sri Lanka

ID 244 Assessing Service Quality in Healthcare Public Sector: An Exploratory on Government Owned Clinics

Linda Theresia, Industrial Engineering Department, Institut Teknologi Indonesia, Indonesia
Ramon Bangun, Retiree from the Ministry of Industry, Republic of Indonesia

ID 249 Implementation of Overall Equipment Effectiveness (OEE) in Garment Manufacturing Industry

Ateeq ur Rehman, Muhammad Babar Ramzan, Abher Rasheed and Muhammad Salman Naeem, Department of Garment Manufacturing, National Textile University, Faisalabad, Pakistan

ID 250 Photovoltaic plant Production and Maintenance Forecast

Hajej Zied and Rezg Nidhal, LGIPM UFR MIM, Lorraine University, Metz, 57073, France

ID 251 Simulation-based Optimization Model to Enhance Petroleum Distribution Network in Sri Lanka

W.W.N. Sachini, W.M.S.K. Weerabahu, R. Wickramarchchi, Department of Industrial Management, University of Kelaniya, Sri Lanka

ID 252 Distributed Job Scheduling Using Multi-Agent System

Sandeep Kumar and Bhupesh Kumar Lad, Industrial and Systems Engineering, Discipline of Mechanical Engineering, Indian Institute of Technology Indore, Indore, 453 552, India
Maharshi Harshadbhai Dhada, Department of Engineering, Institute for Manufacturing, University of Cambridge, CB3 0FS, UK
Kshitij Bakliwal, Department of Computer Science, Purdue University, West Lafayette, IN 47907, USA

ID 253 Iterated Local Search in Physician Scheduling problem

Khalid Al Ghathbar, Mohamed Aly Louly and Mehdi Mrad, Industrial Engineering Department, King Saud University, Riyadh, Kingdom of Saudi Arabia

ID 254 Application of Lean Manufacturing at Warehouse with Simulation Approach

Andreas Arga Donovan, Humasian Nindya Eyba and Vidya Rianti Siahaan, Undergraduate of Industrial Engineering Study Program, Pembangunan Nasional Veteran Jakarta University, Jl. RS Fatmawati, Pd. Labu, Cilandak, Kota Depok, Daerah Khusus Ibukota Jakarta 12450

ID 255 Designing Supervisory Policies that Avoid Livelocks in Manufacturing- and Service-Systems Modeled using General Petri Nets: A Tutorial using an Illustrative Example

R. Khalegi, A. Raman and R.S. Sreenivas, Department of Industrial and Enterprise Systems Engineering, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA

ID 256 A New Approach for Classifying Cross-functional Teams in Product Development Projects

Hamdi Bashir, Department of Industrial Engineering and Engineering Management, Sustainable Engineering Asset Management (SEAM) Research Group, University of Sharjah, Sharjah, UAE

ID 257 Modeling and Analyzing Interrelationships among Project Success Factors and Criteria

Gordian Udechukwu Ojiako, Anwar Hamdan, and Hamdi Bashir, Department of Industrial Engineering and Engineering Management, College of Engineering, University of Sharjah, Sharjah, UAE

ID 258 Structuring Project Interdependencies into a Simple Graphical Hierarchical Model

Helal Al Zaabi and Hamdi Bashir, Department of Industrial Engineering and Engineering Management, University of Sharjah, Sharjah, UAE

ID 259 The Influence of Customer's Belief about E-service Delivery Process on Behavioral Intentions: The Mediating Role of Attitude in a B-A-I Model

Piyush Gupta and Amit Sachan, Indian Institute of Management Ranchi, Ranchi, 834008, India

ID 260 Corporate Sustainability Performance Measurement: A Systematic Review and proposal of an indicator Grid for Manufacturing Companies

Anissa Frini, Department of management science, University of Quebec at Rimouski, Campus of Lévis, 1595, boulevard Alphonse-Desjardins, Lévis (Québec) Canada
Dominique Diouf, Centre d'Étude en Responsabilité Sociale et Écocitoyenneté (CÉRSÉ), Collège Rosemont, Montréal, Canada
Department of management, Laval University, Quebec, Canada

ID 261 Modelling the Effects of Friction on Tool-Chip Interface Temperature During Orthogonal Cutting of Al6061-T6 Aluminium Alloy

Sunday Joshua Ojolo, Sikiru Oluwarotimi Ismail and Kelechi Ogbuanu, Department of Mechanical Engineering, University of Lagos, Akoka-Yaba, Lagos, Nigeria

ID 262 Reflections on Teaching, Research, and Service of a Faculty Member for Those Transitioning into a University Tenure Track Faculty Position

Aezeden Mohamed, Faculty of Engineering and Applied Science, Memorial University, Canada St. John's
Mechanical Engineering Department, PNG University of Technology, Lae, MP 411, Papua New Guinea
John Pumwa, Mechanical Engineering Department, PNG University of Technology, Lae, MP 411, Papua New Guinea

ID 263 Micromechanism and Failure Analysis of INCONEL601

Aezeden Mohamed and John Pumwa, Mechanical Engineering Department, PNG University of Technology, Lae, MP 411, Papua New Guinea

ID 264 Multi-level network planning for blood supply for critical conditions

Sahra Mahdavi and Seyyed Mehdi Sajadifar, Department of Industrial engineering, University of Science and Culture, Iran

ID 265 Generalization Model for Product Development Time in various Market Properties

Mahmood Al Kindi, Ahm Shamsuzzoha and Emad Summad, Department of Mechanical and Industrial Engineering, Sultan Qaboos University, Oman

ID 266 Customer economics trust in Business using Instagram

Homa Atefyekta and Nasser Safaie, K. N. Toosi University of Technology, Tehran, Iran

ID 267 Selection and scheduling of interdependent projects using a modified genetic algorithm

Manish Kumar, M L Mittal, Gunjan Soni and Dheeraj Joshi, Department of Mechanical Engineering, Malaviya National Institute of Technology, Jaipur, India

ID 268 Random Location under Fixed Zone Storage Strategy – A Case Study of Automobile and Electronic Parts Manufacturing Factory

Pikchaya Khongkaew, Industrial Management, Faculty of Business Administration, Thai-Nichi Institute of Technology, Bangkok, 10250, Thailand

ID 269 A Fuzzy AHP Approach to Evaluate Contributing Factors in the Occurrence of Adverse Events in Philippine Hospitals

Jane Frances Cartalla, Kenneth Aynrand Montoya, Shiela May Suyo and Giselle Joy Esmeria, Industrial Engineering Department, De La Salle, University Manila
Michael Angelo Promentilla, Chemical Engineering Department, De La Salle University Manila

ID 270 Impact of Business Process Reengineering of Reverse Logistics for Improving Supply Chain Performance: A Conceptual Framework from a Systematic Review of Literature

Thisuri Kaluarachchi, Kalpani Sarathchandra, Ganguli Wijewardhana and Samanthi Weerabahu, Department of Industrial Management, Faculty of Science, University of Kelaniya, Sri Lanka

ID 271 Mathematical Model of Average waiting time for an Elevator Based on Stochastic Process

Yuki Satoh, Advanced Course in Production Systems Engineering, Salesian Polytechnic Machida, Tokyo 194-0215, Japan
Yoichi Shimakawa, Department of Computer Science and Technology, Salesian Polytechnic Machida, Tokyo 194-0215, Japan

ID 272 Optimization in Personnel Scheduling for Local Content Verification

Rahmat Nurcahyo, Setio Agung Wibowo, Amar Rachman, Industrial Engineering Department, Faculty of Engineering, Universitas Indonesia, Kampus UI Depok, 16424, Indonesia
Alan Dwi Wibowo, Agroindustrial Technology Department, Faculty of Agriculture, Universitas Lambung Mangkurat, Jl A Yani KM 36, Banjarbaru, Kalimantan Selatan, Indonesia

ID 273 A Strategy of Local Content Enhancement in Petroleum and Natural Gas Industry

Rahmat Nurcahyo, Ervina Loide Hutasoit and Erlinda Muslim, Industrial Engineering Department, Faculty of Engineering, Universitas Indonesia, Kampus UI Depok, 16424, Indonesia
Alan Dwi Wibowo, Agroindustrial Technology Department, Faculty of Agriculture, Universitas Lambung Mangkurat, Jl A Yani KM 36, Banjarbaru, Kalimantan Selatan, Indonesia 70714

ID 274 A Study of the Implications of Logistics 4.0 in Future Warehousing: A Sri Lankan Perspective

Navodika Karunarathna, Ruwan Wickramarachchi and Kasuni Vidanagamachchi, Department of Industrial Management, Faculty of Science University of Kelaniya, Sri Lanka

ID 275 Sustainability perspective in aggregate production planning model with fuzzy parameters

Nguyen Truong Thi, Tran Thi My Dung, Vo Thi Kim Cuc, Department of Industrial Management, College of Engineering & Technology, Can Tho University, Vietnam

ID 276 A New Layout Problem for Order-Picking Warehouses

Ömer Öztürkoğlu, Department of Business Administration, Yaşar University, Izmir, 35100 TURKEY
Ayşegül Mağara, Schneider Electric, Izmir, 35100 TURKEY

ID 277 Pilot Static Modeling of Social Business: Case of Kampong Jelekong in Bandung

Gadang Ramantoko, Palti M Sitorus, Sri Widyanesti, Faculty of Economics and Business (FEB), Telkom University, Bandung, 40257, Indonesia

ID 278 Decentralization of Medical Emergency Service to Minimize Response Time

Muhammad Isnaini Hadiyul Umam and Diva Kurnianingtyas, Doctoral Student of Industrial Engineering Department, Institut Teknologi Sepuluh, Nopember, Surabaya, 60111, Indonesia

Budi Santosa and Nurhadi Siswanto, Department of Industrial Engineering, Institut Teknologi Sepuluh Nopember, Surabaya, 60111, Indonesia

ID 279 Coalescing the Lean and Circular Economy

Simon Peter Nadeem, Jose Arturo Garza-Reyes and Anthony I Anosike, Centre for Supply Chain Improvement, University of Derby, Derby, U.K.

Vikas Kumar, Bristol Business School, University of the West of England, Bristol, U.K.

ID 280 Multi-period Temporary Depot Location Problem in Flood Natural Disaster Response

Wapee Manopiniwes, Department of Industrial Engineering, Faculty of Engineering, Chiang Mai University, Chiang Mai, Thailand

Takashi Irohara, Faculty of Science and Technology, Sophia University, Tokyo, Japan

ID 281 Developing a Roadmap to Become a World Class Manufacturing Company: A Case of Process Industry in India

Dr. Anup P. Chaple, Manager – Industrial Engineering, UPL Ltd., India

Sanjay Dharajiya, Lead- World Class Manufacturing, UPL Limited, India

ID 283 Analyzing The Increase In Production Rate By Implementing Value Stream Mapping (Vsm) In Manufacturing Processes

Zehra.K, Shaikh.S2, Tanweer.H, Faheem.A and Zehra.C, Department of Manufacturing Engineering, Mehran university of Engineering & technology, jamshoro, Sindh 67020, Pakistan

ID 284 Present Scenarios of Energy Utilization in Bangladesh

Mohammad Iqbal, Department of Industrial and Production Engineering, Shahjalal University of Science and Technology, Sylhet, Bangladesh
Farhad Hawlader, Department of Petroleum and Mining Engineering, Shahjalal University of Science and Technology, Sylhet, Bangladesh
Salma Akhter, Department of Chemical Engineering and Polymer Science, Shahjalal University of Science and Technology, Sylhet, Bangladesh
Engr. SumayelMuhamad Mallik, Uiversal Yarn Dyeing Ltd.H#445, R#07, Baridhara DOHS, Dhaka-1206, Bangladesh
A. Rashid, Department of Mechanical and Chemical Engineering, Islamic University of Technology, Gazipur, Dhaka, Bangladesh

ID 285 Trends in Green Vehicle Routing in Reverse Logistics

E. Waidyathilaka, V.K. Tharaka and A.P.R. Wickramarachchi, Department of Industrial management, University of Kelaniya, Sri Lanka

ID 286 Technology-driven LPG Supply Chain Integration – A Case of Pakistan

Farhan Daud Qazi and Ijaz Ahmad Chaudhry, Industrial Engineering Department, School of Engineering, University of Management and Technology, Lahore, Pakistan

Omar Zaid, Production Manager, Hadeed Pakistan Pvt. Limited, Sheikhupura, Pakistan

ID 287 Network Security analysis using Markov Models

Shwetank Sharan, Manish Agrawal and Anubhav Shukla, Department of Industrial and Systems Engineering, Indian Institute of Technology, Kharagpur, INDIA

ID 288 Analyzing the impacts of Lean tools and techniques on the efficiency of manufacturing organizations

Ahmed, F., Shaikh, S.A., Hussain, T., Zehra, K. and Dawood Mehran UET, Jamshoro

ID 289 A Model for Assessing Maturity of Industry 4.0 in the Banking Sector

Oshadhi Bandara, Kasuni Vidanagamachchi and Ruwan Wickramarachchi, Department of Industrial Management, Faculty of Science, University of Kelaniya, Sri Lanka

ID 290 Case Study on Maintenance Management Framework of a LPG Cylinder Manufacturing Industry

A.Rashid, Department of Mechanical and Chemical Engineering, Islamic University of Technology, Gazipur, Dhaka, Bangladesh
Md. Shamsuzzoha Sarker, Department of Mechanical and Chemical Engineering, Islamic University of Technology, Gazipur, Dhaka, Bangladesh

ID 291 Solving Multi-Objective Assignment Problem with Decision Maker's Preferences by Using Genetic Algorithm

Md. Mahbubur Rahman, Department of Industrial Engineering and Management, Khulna University of Engineering & Technology, Khulna-9203, Bangladesh
Md. Kutub Uddin, Department of Mechanical Engineering, Khulna University of Engineering & Technology, Khulna-9203, Bangladesh

ID 292 Comparative Study of Systemic Modeling Models for Road Safety

Nassima Laaraj, Laboratory of Energy & Sustainable Development (LPE2D), Sidi Mohamed Ben Abdellah University – EST, Road of Imouzzer – BP: 2427 – Fez, Morocco

Fouad Jawab, LPE2D & Laboratory of International Management Decision techniques and Logistics, Sidi Mohamed Ben Abdellah University – EST, Road of Imouzzer – BP: 2427 – Fez, Morocco

ID 293 An Optimization-based Approach Model for the Improvement of the Performance of Emergency Medical Service Ambulances
Rene D. Estember, Ilynne Geraldine A. Isip, and Ma. Camille C. Misal, School of Industrial Engineering and Engineering Management, Mapua University, Manila, Philippines

ID 294 Verification and Validation Methods across the Product's Lifecycle: A systematic Analysis and Review
Aineias Karkasinas and Athanasios Rentizelas, Department of Design, Manufacturing and Engineering Management, Strathclyde University, Glasgow, Scotland

ID 295 A rough-set based-approach for anticipating competitor's decisions
Dhekra Ben Sassi, Department of Information systems, College of Computer Engineering and Science, Prince Sattam Bin Abdulaziz University, Al Kharej, KSA
RIADI laboratory, National School of Computer Science, La Manouba, Tunisia
Frini Anissa, Department of Management Science, University of Quebec at Rimouski, Levis, Canada 1595, boulevard Alphonse-Desjardins Lévis (Québec) Canada

ID 296 Suitability of Industry 4.0 Concepts for Small and Medium Sized Enterprises: Comparison between an Expert Survey and a User Survey
Erwin Rauch, Thomas Stecher, Marco Unterhofer, Patrick Dallasega and Dominik T. Matt, Industrial Automation and Engineering (IEA), Faculty of Science and Technology, Free University of Bolzano, Piazza Università 5, 39100 Bolzano, Italy

ID 297 Research Advances in Intelligent Transportations Systems (The Case of Advanced Public Transportation Systems
Youssef El Mokaddem and Fouad Jawab, Laboratory of International Management, Decision Making and Logistics (MIDLOG), USMBA, High School of Technology (EST) – Fez, Morocco

ID 298 Location of an Urban Distribution Center Based On Ghg Emissions
Maha BENNANI, MGSI/ LPEDD, Fes, Morocco
Imane MOUFAD, Laboratory of Energy & Sustainable Development (LPE2D), Morocco

ID 299 Identification of health system stakeholders in Morocco
Frichi Youness, Jawab Fouad and Boutahari Said, Laboratory of Manufacturing, Energy and Sustainable Development, Sidi Mohamed Ben Abdellah University, Fez, Morocco

ID 300 Challenges of Total Quality Management in Higher Education Institutions
Abdullah Al-Amri and T.C. Wong, Department of Design, Manufacture and Engineering Management, University of Strathclyde, Glasgow, 75 Montrose St, Glasgow G1 1XJ, UK

ID 301 Applications of Virtual Reality (VR) as Teaching Tool to Enrich Students Learning
Mohamed Ismail, Ph.D., Senior IT Consultant, Texas A&M University at Qatar, Education City, Doha, Qatar
Hamid R. Parsaei, Ph.D., P.E., Professor, Mechanical Engineering, Texas A&M University at Qatar, Education City, Doha, Qatar
Boback Parsaei, Senior Consultant, Integrated Technology Systems, Inc., Houston, Texas

ID 302 Predictive Maintenance as a Means to Improve the Availability of Centrifugal Slurry Pump at Ergo City Deep Plant
Aroon Martinus, Jan Harm C Pretorius and Arie Wessels, Postgraduate School of Engineering Management, University of Johannesburg, Johannesburg, South Africa

ID 303 Sustainable Biodegradable Packaging Material: A Solution for Decreasing Available Capacity of Landfills in the Philippines
Juan Miguel N. Dinglasan, Master of Science in Industrial Engineering and Management, Polytechnic University of the Philippines, Manila, Philippines

ID 316 Cognitive Ergonomics and Electrophysiological Measures of Human Attention and Performance
Bradley Chase, Industrial & Systems Engineering, Shiley-Marcos School of Engineering, University of San Diego, San Diego, CA 92110, USA

ID 317 Women Entrepreneurship in Indonesia: current status and future research opportunities
Luh Putu Eka Yani and Ammar Mohamed Aamer, Industrial Engineering Department, Faculty of Engineering and Technology, Sampoerna University, Jakarta, Indonesia

ID 318 The Role of Digital Leadership on Development of Dynamic Capability with Mediating Variable on Market Orientation and Innovation Capabilities for Indonesia Telecommunication Firms in Facing Disruptive Era

Leonardus W Wasono Mihardjo, Doctor of Research in Management, Bina Nusantara University, West Jakarta, Indonesia

Riza A.N. Rukmana, Senior Member, Industrial Engineering, Telkom University, Bandung, Indonesia

ID 319 Design And Implementation of Automation for Plant Nursery Process Time Reduction

Dian Yulianto, Salaya, Nakhon Pathom, Thailand

ID 320 Aggregated Metrics to Assess Fuel Consumption in Freight Fleets

Jenny Díaz Ramírez, Department of Engineering, Universidad de Monterrey, Monterrey, N.L. 66238, Mexico

José Ignacio Huertas, Energy and Climate Change Research Group, School of Engineering and Science, Tecnológico de Monterrrey, Monterrey, N.L., 68849, Mexico

Nicolas Giraldo Peralta, Mechanical, Electromechanical, and Biomedical Department, Universidad Antonio Nariño, Bogota, D.C., Colombia

ID 326 Ergonomic Design of an Assistive Propulsion System for Manual Wheelchairs

Madylaine G. Delfin and Danna May G. Mendez, School of Industrial Engineering and Engineering Management, Mapua University, Intramuros, Manila

ID 328 A Study on the Facility Layout and Design of Sugar Plants in the Philippines

Madonna F. Andrada and Muriem R. Biscocho, School of Industrial Engineering and Engineering Management, Mapua University, Intramuros, Manila City

ID 329 A review on the awareness of health care practitioners on medical waste: A Case South African health care

Sambil Charles Mukwakungu, Matimba Davis Mabasa, Department of Quality and Operations Management, University of Johannesburg, Johannesburg, South Africa

ID 330 The Impact of Just in Time (JIT) in South African Company's Inventory Management – Case Studies

Sambil Charles Mukwakungu, Matimba Davis Mabasa, Sihle Mankazana, Xolani Mzileni and Sine Aurore Burakeye, Department of Quality and Operations Management, University of Johannesburg, Johannesburg, South Africa

ID 331 The Impact of Corporate Social Responsibility on Consumer Purchase Behaviour in High-Street UK Retailers

Christabel Annora Paramita Parung, S.T., M.Sc., Faculty of Creative Industry, University of Surabaya, Surabaya, Indonesia

ID 332 Construction industry and women: A review of the barriers

Dr Abdussalam Shibani, lecturer in construction and project management Coventry University

Noof Alawanati Msc, Construction management Coventry University

ID 333 An Energy Harvesting Alternative to Wellhead Gas Chokes

Albertus Retnanto, Ph.D. and Mohamed Idris, Petroleum Engineering, Texas A&M University at Qatar, Doha, Qatar

ID 334 The Dynamics of Community and Parents Participation: Huyula Culture Approach In Educational Financing In High School, Vocational School And Madrasah Aliyah (Islamic High School) In Gorontalo Province, Indonesia

Arwildayanto, Educational Management Program, School of Educational Science, Universitas Negeri Gorontalo

Popi Puadah, School of Postgraduate Program, Islamic Education, Universitas Islam Jakarta

Hendri, School of Engineering, Universitas Mercu Buana

ID 335 A Multi-Item Inventory Control Model Using Multi-Objective Particle Swarm Optimization (MOPSO)

Ferdous Sarwar, Mahjabin Rahman and Mushaer Ahmed, Department of Industrial & Production Engineering, Bangladesh University of Engineering & Technology, Dhaka, Bangladesh

ID 336 Hidden Markov Models to Detect Early Equipment Failure

Prince Agarwal, K Subash Nirmal, K Nageswara Reddy, Akhilesh Kumar, Department of Industrial and Systems Engineering, Indian Institute of Technology, Kharagpur, West Bengal, India-721302

ID 337 Development of Educational Process Capability Maturity Model

Nedaa Alshaheen, Total Quality Management Techniques Department, Middle Technical University, Baghdad, Iraq

Sura Alshaheen, Republic of Iraq Ministry of Education, Department of Total Quality Management and Organizational development, Baghdad, Iraq

ID 338 A Formulation of Priority – Based Financial Allocation Model for Student Development Activities in SPED Centers

Jenalyn Shigella G. Yandug and Phoebe Lie T. Dionisio, School of Industrial Engineering and Engineering Management, Mapua University, Intramuros, Manila

ID 339 Knowledge Management by Farmers in the Win-Win Relationship Project in Land Reform Areas, Northern Thailand

Wallratat Intaruccomporn, Department of Agricultural Economy and Development, Faculty of Agriculture, Chiang Mai University, Thailand

ID 340 Demand Modelling and Establishment of Supply Chain Management for Coconut Sugar in the Philippines

Mary Christy O. Mendoza and Erica Racquel G. Cruz, School of Industrial Engineering and Engineering Management, Mapua University, Intramuros, Manila

ID 341 Design issues in Maheshwar handcrafts (MP, India)

Pratik Mukesh, Master of Design, Design Discipline, PDPM Indian Institute of Information Technology, design and Manufacturing, Jabalpur, M.P., India

ID 342 Early Detection of Equipment Failure Using One-class Support Vector Machine

K Subash Nirmal, Prince Agarwal and K Nageswara Reddy, Department of Industrial and Systems Engineering, Indian Institute of Technology, Kharagpur, West Bengal, India

ID 343 Information Layout Designing of 'Barco Display Screen' used in State Load Despatch Centre at MPPTCL

Pratibha Sahu, Master of Design, Design Discipline, PDPM Indian Institute of Information Technology Design & Manufacturing, Jabalpur, M.P., India

ID 344 Higher initial costs for renewables electricity: Emission, water and job-creation benefits offset the higher costs

Md. Mizanur Rahman, Hasan Mohd Faizal, Aminuddin Saat and Mazlan Abdul Wahid, Department of Thermo Fluids, School of Mechanical Engineering, Universiti Teknologi Malaysia, 81310 UTM, Johor Bahru, Malaysia

ID 345 Using a Safety Culture Assessment of Multinational Oil/Gas Companies to Improve Safety Performance in Saudi Arabia

Saleh Al Sulaie and Eui H. Park, Department of Industrial & Systems Engineering, North Carolina A&T State University, Greensboro, NC

ID 346 Impacts of Gender on Environmental and Cultural Influences in the Adoption of E-Commerce in Saudi Arabia

Khaled Alyami and Eui H. Park, Department of Industrial & Systems Engineering, North Carolina A&T State University, Greensboro, NC, U.S.A.

ID 347 Optimal production planning of hybrid manufacturing/remanufacturing systems under deteriorations

Annie Francie Kouedeu, Jean-Pierre Kenné and Victor Songmene, Department of Mechanical Engineering, Laboratory of Integrated Production Technologies, University of Qurbec, Ecole de technologie supérieure, 1100 Notre-Dame Street West, Montreal, Quebec, Canada

ID 348 Innovation Process of Music Composing: A Case Study in Conservatory of Music

Evo Sampetua Hariandja, Department of Management Business School, Universitas Pelita Harapan, Tangerang-15811, Indonesia

ID 349 Dynamic Marketing Capability in Start-up Companies: An Exploratory Investigation of the Female Entrepreneurs

Evo Sampetua Hariandja, Department of Management Business School, Universitas Pelita Harapan, Tangerang-15811, Indonesia

ID 350 Lean Techniques Application to Improve Product Replacement Process in a Manufacturing Organization: Case of a Brandable Company in Johannesburg, South Africa

Sambil Charles Mukwakungu, Matimba Davis Mabasa and Xihlovo Baloyi, Department of Quality and Operations Management, University of Johannesburg, Johannesburg, South Africa

ID 356 Business English as a Global Needs for Entrepreneur Students of Narotama University

Elok Damayanti and Agus Sukoco, Narotama University, Arief Rahman Hakim No. 51, Surabaya, Indonesia

ID 357 The effect of Project Portfolio Selection on Business success: An empirical study in the Indian Auto Component Industry

Vilas Kharat, NITIE, Mumbai, Maharashtra, India

ID 358 Impacts of E-commerce in apparel supply chain

Shibbir Ahmad, SUST Gazipur, Bangladesh

ID 360 Project risk management in Iranian software projects

Ali Reza Afshari, Department of Industrial Engineering, Shirvan Branch, Islamic Azad University, Shirvan, Iran

ID 362 Privacy and Security aware Cryptographic Algorithm for Secure Cloud Data Storage

B. Muthulakshmi, Department of Computer Applications, Kalasalingam Academy of Research and Education, Anand Nagar, Krishnankoil
M.Venkatesulu, Department of Information Technology, Kalasalingam Academy of Research and Education, Anand Nagar, Krishnankoil

ID 363 Modified Multivariate Control Chart Using Spatial Signs and Ranks for Monitoring Process Mean: A Case of t-Distribution

Thidathip Haanchumpol, Prapaisri Sudasna-na-Ayudthya and Chansiri Singhtaun, Department of Industrial Engineering, Faculty of Engineering, Kasetsart University, Bangkok, Thailand

ID 364 Multi-objective Robust Optimization for the Design of Biomass Co-firing Networks

Jayne Lois G. San Juan and Charlle L. Sy, Industrial Engineering Department, De La Salle University, Manila, Philippines

ID 365 Factors Investigation for the Development of Medical Device towards Sustainable Product

Taisy Mak and Duangpun kritchanchai, Department of Industrial Engineering, Mahidol University, Salaya, Nakhon Pathom, 73170, Thailand

ID 366 Autocorrelated Multivariate Control Chart in Cooking Oil Industry

Ivan Pudjihardjo, Ig. Jaka Mulyana and Luh Juni Asrini, Industrial Engineering Department, Widya Mandala Surabaya Catholic University, Jl. Kalijudan 37 Surabaya, Indonesia

ID 367 A Scheduling Model for Full Maintenance of Automated Teller Machines

Carlos Ilagan, Angelia Trinidad, John Lorenz Wee and Charlle Sy, Industrial Engineering Department, De La Salle University, Manila, Philippines

ID 368 An Optimization Model for the Design of an Off-Grid Micro-Hydro Power Plant

Juan Carlo Hernandez, Carlos Jan Peñas, Adrianne Ressa Tiu and Charlle Sy, Industrial Engineering Department, De La Salle University, Manila, Philippines

ID 369 Carbon Emission Impact on the Logistics of Second Generation Biomass (SGB) in Island Nations: a Case Study of Indonesia

Denny Satria Ika and Hui-Ming Wee, Chung-Yuan Christian University, Taoyuan, Chung-Li, Taiwan

ID 370 Effect of Using Electronic Map While Driving on Human Error Probability

Lovely Lady, Wahyu Susihono, Industrial Engineering Department, University of Sultan Ageng Tirtayasa, Cilegon – Indonesia

ID 371 A New Metaheuristics for Solving Traveling Salesman Problem: Partial Comparison Optimization

Antono Adhi, Industrial Engineering Department, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia,
Industrial Engineering Department, Universitas Stikubank, Semarang, Indonesia
Budi Santosa and Nurhadi Siswanto, Industrial Engineering Department, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia

ID 372 Disaster Resilience Index: Development and Validation of a Scorecard for Measuring School Disaster Resilience Using Factor Analysis

Romalyn L. Galingan, Industrial Engineering and Management, Graduate School, Polytechnic University of the Philippines, Sta. Mesa, Manila
Industrial Engineering Program, College of Engineering and Architecture, Technological Institute of the Philippines, Quezon City

ID 373 Optimization of voltage and frequency by using 'Ant Colony Optimization' at hydro-electric power plant output having permanent magnate synchronous generator

Ompal Singh and Arunima Verma, IET Lucknow, Uttar Pradesh, India

ID 374 A Case Study on Average Handling Time of Calls in Teleperformance Company

Ramon C. Gloria III, Frendilyn Myca Valerie P. Ubiña and Bradley James D. Villanueva, Department of Industrial Engineering, Technological Institute of the Philippines, 363 P. Casal St., Quiapo, Metro Manila
Janina Elyse A. Reyes, Industrial Engineering Department, Technological Institute of the Philippines, Quiapo Metro Manila, Philippines

ID 375 Using Statistical Process Control Measures to Minimize Defects in the Plastic Department of Marilao Alerco Industrial Corporation

Eugene R. Tamba, Racquel G. Tadina and Val Ryan Aguilar, Industrial Engineering, Technological Institute of the Philippines – Manila, 1338 Arlegui St. Quiapo, Manila
Janina Elyse Reyes, Industrial Engineering Department, Technological Institute of the Philippines, Quiapo Metro Manila, Philippines

ID 376 Identifying Drivers of Lean Six Sigma Implementation in the Process Industries: A Case Study

Ferdous Sarwar, Farzana Islam, Md Sadman Sakib and Sampa Halder, Department of Industrial & Production Engineering, Bangladesh University of Engineering & Technology, Dhaka, Bangladesh

ID 377 Developing Green Supply Chains for New Kuwait: A Strategic Approach

Ghaliah Al-Mutairi, Mariam Al-Ajran, Hawraa Al-Bather, Fatma Mhaisen, Rawan Al-Humaidi, and Walid Smew, Industrial Engineering Department, American University of the Middle East (AUM), Eqaila, Kuwait

ID 378 A Case study of 5S Implementation in Inspection Process

Karthik Subburaman, Department of Mechanical Engineering, Veltech Rangarajan Dr Sagunthala R&D Institute of Science and Technology Avadi, Chennai, Tamil Nadu, India

ID 379 Developing an SPC-EPC Unified Framework to Improve Production Disruption in Chemical Industry in Kuwait

Ali Issawy, Bader AlMutawaa, Samer Al khateeb, Osama Ahmad, Abdullah AlHaj Hasan, and Walid Smew, Industrial Engineering Department, American University of the Middle East (AUM), Eqaila, Kuwait

ID 380 Price-quantity-setting mixed duopoly models: market opening

Fernanda A. Ferreira and Flávio Ferreira, Polytechnic Institute of Porto, School of Hospitality and Tourism, Applied Management Research Unit (UNIAG), Rua D. Sancho I, 981, 4480-876 Vila do Conde, Portugal

ID 381 Implementing DHS algorithms using Artix-7

Hafiz Usama Hashmat, Department of Technology, Faculty of Engineering and Technology, The University of Lahore, Lahore, 54000, Pakistan
Abdul Rauf, Department of Electrical Engineering, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia
Umar Muhammad Ali, Department of Electrical Engineering, Georgia Institute of Technology, North Avenue, Atlanta, GA 30332, USA
Abdurrahman Mubeen Ali, Department of Electrical Engineering, FAST- National University of Computer and Emerging Sciences, Lahore, 54000, Pakistan
Dr. Anjum Ali, Professor of Electrical Engineering, Founder and CEO, RDM Associates, Atlanta, Georgia, USA

ID 382 Investigating the Adoption of Internet of Things Technology Using Agent Based Simulation

Mohammed Basingab, Industrial Engineering Department, King Abdulaziz University, Jeddah, 22252, Saudi Arabia

ID 383 Circular Economy in Industry: Some Insights and Directions to Implement Circularity

José Vasconcelos Ferreira and Ana Luísa Ramos, GOVCOPP/Department of Economics, Management, Industrial Engineering and Tourism University of Aveiro, Aveiro, Portugal
Marta Miranda Camoesas, Department of Economics, Management, Industrial Engineering and Tourism, University of Aveiro, Aveiro, Portugal

ID 384 Customer Expectations Analysis on Aircraft Maintenance Outsourcing Companies

Rahmat Nurcahyo and Ramdha Dien Azka, Industrial Engineering Department, Faculty of Engineering, Universitas Indonesia, Kampus UI Depok, 16424, Indonesia
Alan Dwi Wibowo, Agroindustrial Technology Department, Faculty of Agriculture, Universitas Lambung Mangkurat, Jl A Yani KM 36, Banjarbaru, Kalimantan Selatan, Indonesia

ID 385 Numerical Simulation for Shoreline Erosion by Using New Formula of Longshore Sediment Transport Rate

Subiyanto and Yudi Nurul Ihsan, Department of Marine Sciences, Faculty of Fishery and Marine Sciences, Universitas Padjadjaran, Indonesia
Sukono and Sudradjat Supian, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Aceng Sambas, Department of Mechanical Engineering, Universitas Muhammadiyah Tasikmalaya, Indonesia
Acmad Rizal, Department of Fishery, Faculty of Fishery and Marine Sciences, Universitas Padjadjaran, Indonesia
Mohammad Fadhli Ahmad, Department of Maritime Technology, School of Ocean Engineering, Universiti Malaysia Terengganu, Malaysia
Mustafa Mamat, Faculty of Informatics and Computing, Universiti Sultan Zainal Abidin, Malaysia
Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 386 Application of Spatial Weighting Matrix of GSTAR by Using CLARANS Clustering on Farmer Exchange Rates in 32 Provinces in Indonesia

Annisa Azizah, Master Program in Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Rini Cahyandari and Arief Fatchul Huda, Department of Mathematics, Faculty of Science and Technology, Universitas Islam Negeri Sunan Gunung Djati Bandung, Indonesia
Sukono, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Subiyanto, Department of Marine Sciences, Faculty of Fishery and Marine Sciences, Universitas Padjadjaran, Indonesia
Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 387 The LASSO (Least Absolute Shrinkage and Selection Operator) Method to Predict Indonesian Foreign Exchange Deposit Data

Trisha Magdalena Adelheid Januaviani, Master Program in Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Bandung, Indonesia
Nurul Gusriani, Khafsah Joebaedi and Sukono, Department Program in Mathematics, Faculty of Mathematics and Natural Sciences, Universitas

Padjadjaran, Bandung, Indonesia

Subiyanto, Department of Marine Science, Faculty of Fishery and Marine Science, Universitas Padjadjaran, Bandung, Indonesia

Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 388 The Completeness of p-Summable Sequences as 2-Normed Spaces

Juan Miguel N. Dinglasan, Industrial Engineering Department, Technological Institute of the Philippines, Quezon City, Philippines

Shelvi Ekariani, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Andalas University, Padang, Indonesia

Sukono, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Bandung, Indonesia

Subiyanto, Department of Marine, Faculty of Fishery and Marine Sciences, Universitas Padjadjaran, Bandung, Indonesia

Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 389 Application of Graph Hamilton on Determining the Shortest Route of Trans Metro Bandung

Yusuf Ibrahim Abdallah, Master Program in Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia

Yani Ramdani and Yurika Permanasari, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Islam Bandung, Indonesia

Sukono, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia

Subiyanto, Department of Marine Sciences, Faculty of Fishery and Marine Sciences, Universitas Padjadjaran, Indonesia

Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 390 Numerical Simulation of Interferon Alpha (INF-α) in Mathematical Model of Immunotherapy

Subiyanto, Department of Marine Sciences, Faculty of Fishery and Marine Sciences, Universitas Padjadjaran, Indonesia

Sukono and Sudradjat Supian, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia

Yuyun Hidayat, Department of Statistics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia

Aceng Sambas, Department of Mechanical Engineering, Universitas Muhammadiyah Tasikmalaya, Indonesia

Mustafa Mamat, Faculty of Informatics and Computing, Universiti Sultan Zainal Abidin, Malaysia

Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 391 Analysis Students Abilities in Completing Mathematical Problems Dimension Three in Junior High School

Rahmi Wiganda Elastika, Master Program in Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia

Zulkarnain, Department of Mathematics, Faculty of Teacher Training and Science, Universitas Riau, Indonesia

Mefa Indriati, Department of Mathematics, Faculty of Teacher Training and Science, Universitas Islam Riau, Indonesia

Sukono, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia

Subiyanto, Department of Marine Sciences, Faculty of Fishery and Marine Sciences, Universitas Padjadjaran, Indonesia

Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 392 Streamlining the Flow of Production System through Elimination the Waste of the Overburden (Muri) for Manual Handling Process

Mohd Norzaimi Che Ani, Manufacturing Engineering Section, Universiti Kuala Lumpur – Malaysian Spanish Institute, Kedah, Malaysia

Shahrul Kamaruddin, Mechanical and Industrial Engineering Department, Universiti Teknologi Petronas, Perak, Malaysia

Ishak Abdul Azid, Mechanical Engineering Section, Universiti Kuala Lumpur – Malaysian Spanish Institute, Kedah, Malaysia

ID 393 Applications of Arduino Based LFR

Syed Sharjeel Imam, Sapienza University of Rome, Rome, Italy

Fareed Ahmad, Department of Bioinformatics, Jamia Millia Islamia, New Delhi, India

Mohammad Sadiq Saeed, Department of Civil Engineering, ZHCET, Aligarh Muslim University, Aligarh, India

Mohd Ovais R Khan, Department of CSE, Sapienza University of Rome, Rome, Italy

ID 394 Opportunities for Use of Blockchain Technology in Supply Chains: Australian Manufacturer Case Study

Elias Abou Maroun, Faculty of Engineering and Information Technology, University of Technology Sydney, Australia

Jay Daniel, Derby Business School, University of Derby, UK

ID 395 Design of Seven Level Dynamic Voltage Restorer For Voltage Sag And Harmonics Mitigation

K Chandrasekaran, University Tunku Abdul Rahman, Kampar, Perak, Malaysia

V.K. Ramachandaramurthy, Power Quality Research Group, University Tenaga Nasional, Malaysia

ID 396 Application of Statistical Process Control on Sunbless Industrial Corporation

Jerlyn Borja, Veniceredge Eugenio, Ferdinand Tomas and Ariana Villarico, Department of Industrial Engineering, Technological Institute of the Philippines, Manila, Philippines

Janina Elyse Reyes, Industrial Engineering Department, Technological Institute of the Philippines, Quiapo Metro Manila, Philippines

ID 397 The Capacitated Team Orienteering Problem

Aldy Gunawan and Hoong Chuin Lau, School of Information Systems, Singapore Management University, Singapore, 178902

Kien Ming Ng and Gordy Adiprasetyo, Department of Industrial Systems Engineering & Management, National University of Singapore, Singapore, 117576

Vincent F. Yu, Department of Industrial Management, National Taiwan University of Science and Technology, Taipei 106, Taiwan

ID 398 Engineering Education through Students Engagement in Virtual Learning Space

Puteri Suhaiza Sulaiman, Department of Multimedia, Faculty of Computer Science and Information Technology, UPM Serdang, Malaysia

ID 399 Linking knowledge sourcing, transformation and exploitation activities for innovation: Evidence from UK manufacturing firms

Arif Hartono, Management Department, Faculty of Economics, Universitas Islam Indonesia, Ringroad Utara, Sleman, Yogyakarta 55281

ID 400 Improving the Fabrication and Welding Workshop at Kuwait Oil Company for Better Worker Performance by Using Digital Human Modeling and Simulation

Fatemah AlKhozam, Hebah AlEnezi, Muneerah AlMetlaqem, Rahaf AlAjmi, Shareefah Haji, Kareem Abbady, and Suat Kasap, Industrial Engineering Department, College of Engineering and Technology, American University of the Middle East – AUM, Egaila, Kuwait

ID 401 Developing a Mobile Application for Safety Engineers for Detailed Hazard Analysis

Fay AlDallal, Nojoud AlMutairi, Mastourah AlRasheedi, Munerah AlShadad, Sarah AlShadad, and Suat Kasap, Industrial Engineering Department, College of Engineering and Technology, American University of the Middle East – AUM, Egaila, Kuwait

ID 402 Food Waste in Supply Chains: A Literature Review

Atikha Sidhi Cahyana, Department of Industrial Engineering, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia

Department of Industrial Engineering, Universitas Muhammadiyah Sidoarjo, Sidoarjo, Indonesia

Iwan Vanany and Niniet Indah Arvitrida, Department of Industrial Engineering, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia

ID 403 A Technology Foresight Perspective on Household Waste Management Practices

Eta Wahab, Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia, Johor, Malaysia

Zaurin Ali, Centre For Diploma Studies Department, Universiti Tun Hussein Onn Malaysia, Johor, Malaysia

ID 404 Service Quality to E-Service Quality: A Paradigm Shift

Sadaf Firdous and Rahela Farooqi, Centre for Management Studies, Jamia Millia Islamia, 110025, New Delhi, India

ID 405 Blood Supply Chain Challenges: Evidence from Indonesia

Agus Mansur, Iwan Vanany and Niniet Indah Arvitrida, Industrial Engineering Department, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia

ID 406 Few Refinements to Capacitated Plant Location Problem

R.R.K. Sharma, Ajay Jha and Himanshu Rahangdale, Department of Industrial and Management Engineering, IIT Kanpur 208016, India

ID 407 Renewable Energy Management: Technical and Economic Evaluation of an Optimized Photovoltaic System

Hamed Allaham, Industrial Engineering and Engineering Management Department, College of Engineering, University of Sharjah, Sharjah, UAE

Abdul Kadir Hamid, Electrical and Computer Engineering Department College of Engineering, University of Sharjah, Sharjah, UAE

Ali Cheaitou, Sustainable Engineering Asset Management (SEAM) Research Group and Industrial Engineering and Engineering Management Department, College of Engineering, University of Sharjah, Sharjah, UAE

ID 408 Design Optimization of Equipment Controls Setup and Workstation Tables for the Remote Production Taping of a Media Broadcasting Company

Arriane A. Palisoc, Gerald O. Semifrania, Ma. Teodora E. Gutierrez, Yoshiki B. Kurata and Maricar M. Navarro, Department of Industrial Engineering, Technological Institute of the Philippines Quezon City, Philippines

ID 409 Few Refinements to Simple Plant Location Problem

R.R.K. Sharma, Ajay Jha and Urvashi Sharma, Department of Industrial and Management Engineering, IIT Kanpur 208016, India

ID 410 Development Of Internal Quality Assurance System Iso 9001: 2008 Based On Iwa 2: 2007 Using Web-Based Document Management Control (DMC) Applications

Hermien Tridayanti, Bayu Airlangga Putra, Sengguruh Nilowardono, Economic and Business Faculty, Narotama University, Surabaya, East Java, Indonesia

ID 411 Optimization of Biogas Production from sewage sludge

Mohamed Belaid, Anthony Njuguna Matheri, Itumeleng Constance Lelosa, Edison Muzenda and Ishmael Ramatsa, Department of Chemical Engineering Technology, Faculty of Engineering and the Built Environment, University of Johannesburg, Doornfontein, Johannesburg, South Africa

ID 412 Biochemical Methane Potential Analysis using Cow dung, Chicken manure and Pig manure under Mesophilic Conditions

Mohamed Belaid, Anthony Njuguna Matheri, Nomkhosi Princess Mdluli and Edison Muzenda, Department of Chemical Engineering Technology, Faculty of Engineering and the Built Environment, University of Johannesburg, Doornfontein, Johannesburg, South Africa

ID 413 Increasing Productivity in Garments Manufacturing through Time Standardization and Work Measurement

Valerie Peralta, Jerran Del Mundo, Juan Miguel Dinglasan, Patrick James Palma, Bert, Regin Santiago, and Cohesir Sims, Department of Industrial Engineering, Technological Institute of the Philippines, Quezon City, Philippines

ID 414 Statistical Analysis in Measuring Employee Performance at Department Store

Ahmad Syarif Hidayaulloh, Agus Sukoco, Elok Damayanti, Arasy Alimudin, M. Ikhsan Setiawan and Sriwiwoho Mudjanarko, Faculty Economy and Business, Narotama University, Surabaya, Indonesia
Dani Hermanto, Faculty of engineering and technology, University of Derby, UK
Abdul Talib Bin Bon, Fakulti Pengurusan Teknologi dan Perniagaan, Universiti Tun Hussein Onn Malaysia (UTHM), Johor, Malaysia

ID 415 Analysis of the Efficiency of Company's Strategy by Dismissing Employees and Replacing Them with the Home Industry

Arasy Alimudin, Agus Sukoco, Elok Damayanti, Rony Wardhana and Ibnu Farid, Faculty Economy and Business, Narotama University, Surabaya, Indonesia
Dani Hermanto, Faculty of engineering and technology, University of Derby, UK
Abdul Talib Bin Bon, Fakulti Pengurusan Teknologi dan Perniagaan, Universiti Tun Hussein Onn Malaysia (UTHM), Johor, Malaysia

ID 416 Do E-Satisfaction And E-Trust Affect Online Repurchase Intention?

Ade Woroko, Santirianingrum Soebandhi, Avi Sunani, Hermin Tridayanti, Sengguruh Nilowardhono and Ronny Wardhana, Faculty Economy and Business, Narotama University, Surabaya, Indonesia
Agus Sukoco, Faculty of engineering and technology, University of Derby, UK
Dani Hermanto and Abdul Talib Bin Bon, Fakulti Pengurusan Teknologi dan Perniagaan, Universiti Tun Hussein Onn Malaysia (UTHM), Johor, Malaysia

ID 417 The effects of chromosome length on hyper-heuristics for solving the maritime inventory routing problems

Nurhadi Siswanto, Department of Industrial Engineering, Institut Teknologi Sepuluh Nopember, Surabaya, 60111, Indonesia

ID 418 Seal Slurry Analysis Based On Asbuton Addition and Cement Filler Variation

Ivandy Rahmadianto Madya, Sri Wiwoho Mudjanarko, Wahyu Mulyo Utomo and Ronny Dorotun, Departement of Civil Engineering, Narotama University, Surabaya, 60117, Indonesia
Agus Sukoco, Management Business, Narotama University, Surabaya, 60117, Indonesia
Arthur Daniel Limantara, Departement of Civil Engineering, State University of Surabaya, Surabaya, Indonesia
Firdaus Pratama Wiwoho, Departement of Civil Engineering, Institut Teknologi Sepuluh Nopember, Surabaya, 60117, Indonesia
Abdul Talib Bin Bon, Fakulti Pengurusan Teknologi dan Perniagaan, Universiti Tun Hussein Onn Malaysia (UTHM), Johor, Malaysia

ID 419 Utilitarian and Hedonic Motivations: Its Influences on Search and Purchase Intention in Instagram

Randy Angga Kusuma, Santirianingrum Soebandhi, Hamzah Denny Subagyo and Agus Sukoco, Faculty Economy and Business, Narotama University, Surabaya, Indonesia
Dani Hermanto, Faculty of engineering and technology, University of Derby, UK
Abdul Talib Bin Bon, Fakulti Pengurusan Teknologi dan Perniagaan, Universiti Tun Hussein Onn Malaysia (UTHM), Johor, Malaysia

ID 420 Indonesia Airport, Passanger and Aircraft impact on Regional Budget (APBD)

Muhammad Ikhsan Setiawan, Sri Wiwoho Mudjanarko and Ronny Durrotun Nasihien, Department of Civil Engineering, Narotama University, Surabaya, Indonesia
Agus Sukoco and Joko Suyono, Department of Management, Narotama University, Surabaya, Indonesia
Dani Hermanto, Faculty of Engineering and Technology, University of Derby, UK
Abdul Talib Bin Bon, Mohd Haziman Wan Ibrahim, Universiti Tun Hussein Onn Malaysia (UTHM), Johor, Malaysia

ID 421 Plastic Waste of Low Density Polyethlene (Ldpe) Types in Asphalt Mixture

Zulfawardi, Koespiadi, Sri Wiwoho Mudjanarko and M. Ikhsan Setiawan, Departement of Civil Engineering, Narotama University, Surabaya, 60117, Indonesia
Agus Sukoco, Management Business, Narotama University, Surabaya, 60117, Indonesia

Dadang Supriyatno, Departement of Civil Engineering, State University of Surabaya, Surabaya, Indonesia

Firdaus Pratama Wiwoho, Departement of Civil Engineering, Institut Teknologi Sepuluh Nopember, Surabaya, 60117, Indonesia

Abdul Thalib bin Bun, Fakulti Pengurusan Teknologi dan Perniagaan, Universiti Tun Hussein Onn Malaysia (UTHM), Johor, Malaysia

ID 422 Phenomenological Study of ERP-Based PDT Implementation in Enhancing Firm Performance

Avi Sunani and Rony Wardhana, Narotama University, Surabaya, East Java, Indonesia

ID 423 The Behavior and Entrepreneurial Intentions of the Millennia Generation of Indonesia, Studies in Surabaya City Students

Agus Sukoco, M. Ikhsan Setiawan, Sriwiwoho Mudjanarko, Arasy Alimudin and Iswachyu Dhaniarti, Faculty Economy and Business, Narotama University Surabaya Indonesia

Hening Widi Oetomo and Achmad Ridwan, Faculty Economy and Business, SIESIA Surabaya Indonesia

Dani Harmanto, Faculty of engineering and technology, University of Derby, UK

Talib bin Bon, Fakulti Pengurusan Teknologi dan Perniagaan, Universiti Tun Hussein Onn Malaysia (UTHM), Johor, Malaysia

ID 424 Airport, Passenger and Aircraft supporting to Regional Growth

Muhammad Ikhsan Setiawan, Department of Civil Engineering, Narotama University, Surabaya, Indonesia

Agus Sukoco, Department of Management, Narotama University, Surabaya, Indonesia

Paisal Halim, Institut Ilmu Sosial dan Manajemen STIAMI, Jakarta, Indonesia

Dani Hermanto, Faculty of Engineering and Technology, University of Derby, UK

Abdul Talib Bin Bon, Mohd Haziman Wan Ibrahim, Mohd Adib Mohammad Razi, Norzila Binti Othman, Mohd Irwan Bin Juki, Ahmad Zurisman Bin Mohd Ali and Wahyu Mulyo Utomo, Universiti Tun Hussein Onn Malaysia (UTHM), Johor, Malaysia

ID 425 Business Analytics Maturity Models: A Systematic Review of Literature

Kaveesha Ariyarathna and Suren Peter, Department of Industrial Management, University of Kelaniya, Sri Lanka

ID 426 Work-related Factors affecting the Sustained Attention among Production Workers in a Pharmaceutical Company in the Philippines

Charlene Cariaga, Alyza Marie D. Tolentino, August Adrian A. Castor, Khenn S. Arista, John Nathanoj A. Basilio and Yoshiki B. Kurata, Department of Industrial Engineering, Technological Institute of the Philippines, Quezon City, Philippines

ID 427 Impact of variation orders occurrence in construction: A case study of Polokwane, Limpopo Province

Pfumelani Malulekea, Clinton Aigbavboab and Wellington Thwalac, Department of construction management and Quantity surveying, University of Johannesburg, Johannesburg, South Africa

ID 428 The Paths From Service Quality Dimensions To Customer Loyalty: An Application On Sri Lankan Supermarket Customers

M. T. Dimantha Jayasanka and L. H. T. De. S. Wickramasuriya, Department of Decision Sciences, University of Sri Jayawardenepura, Gangodawila, Nugegoda, Sri Lanka

ID 429 Feasibility Study On Proposed Micro Hydro Electrical Powerplant

Dr. Palakshappa K, PACE, Department of Civil Engineering, Visvesvaraya Technological University, Mangalore, 574153, INDIA

Mr. Rudresha N, PACE, Department of Mechanical Engineering, Visvesvaraya Technological University, Mangalore, 574153, India

Dr. Vijay Kumar M, JSSATE, Department of Industrial Engineering & Management, Visvesvaraya Technological University, Bangalore, 560060, India

ID 437 Continuous Improvement to Create Value: Warehouse Management in a Telecommunications Company

José Vasconcelos Ferreira and Ana Luísa Ramos, GOVCOPP/Department of Economics, Management, Industrial Engineering and Tourism, University of Aveiro, Aveiro, Portugal

Adriana Ferreira Esteves, Department of Economics, Management, Industrial Engineering and Tourism, University of Aveiro, Aveiro, Portugal

ID 438 AMBHigh: A User Ergonomic Mobile Learning Application Intended for Business Management Secondary Students in the Philippines

Valerie B. Peralta, Jerran Del R. Mundo, Patrick James M. Palma, Bert Regin S. Santiago, Cohesir V. Sims, Francis I. Sulit and Yoshiki B. Kurata, Industrial Engineering Department, Technological Institute of the Philippines – Quezon City, Quezon City, Philippines

ID 439 A Critical review about performance management in education systems: Case of Morocco

Hind Benlhabib and Abdelaziz Berrado, Equipe AMIPS, Ecole Mohammadia d'Ingénieurs, Mohammed V University of Rabat, Morocco

ID 440 Solar Powered Plane

Syed Sharjeel Imam, Sapienza University of Rome, Rome, Italy

Mohammad Sadiq Saeed, Department of Civil Engineering, ZHCET, Aligarh Muslim University, Aligarh, India

Mohammad Asim, Department of Electrical Engineering, Integral University, Lucknow, India

ID 441 Techno-Commercial and Feasibility Analysis of Energy Efficient Solar Powered Technologies for Indian Scenarios

Ganeshan Subramanian & Aimen Sudhir, Production Engineering Department, Veermata Jijabai Technological Institute, Matunga, Mumbai 400019, India

Mandar Tendolkar, Mechanical Engineering Department, Veermata Jijabai Technological Institute, Matunga, Mumbai 400019, India

ID 442 A strategic relationship building through procurement 4.0: An analysis from the apparel industry

P. M. D. Rasanjani, W. W. N. Sachini, G. A. S. Sandamali and W. M. S. K. Weerabahu, Department of Industrial Management, Faculty of Science, University of Kelaniya, SriLanka

ID 446 Approaches to Catering to Variability in Demand Fulfillment in a First Mile Logistics Network

Sanchita Das, Amit Gahlawat and Sarvartha Kanchan

ID 447 Evaluation of Fertilization Storage System Considering Seasonal Demand using Discrete Event Simulation

Nurhadi Siswanto, Department of Industrial Engineering, Institut Teknologi Sepuluh Nopember, Surabaya, 60111, Indonesia

ID 448 Investigating curriculum transformation pathways in technological planning schools: Learning from conventional planning programmes and beyond

Trynos Gumbo, University of Johannesburg, Department of Town and Regional planning, Office 6062, Sixth Floor, John Orr Building, Beit and Siemert Street, 2028. Johannesburg, South Africa

Brightnes Risimati, University of Johannesburg, Department of Quality and Operations Management, Auckland Park Bunting Road Campus, Johannesburg, South Africa

Emaculate Ingwani, University of Venda, Department of Urban and Regional Planning, Thohoyandou, 0950, Thohoyandou, South Africa

ID 449 Exploring the efficacy of blended learning and innovative assessments in town planning students at the University of Johannesburg

Trynos Gumbo, University of Johannesburg, Department of Town and Regional planning, Johannesburg, South Africa

Siphiwe Given Mbatha, University of Johannesburg, Department of Quality and Operations Management

Auckland Park Bunting Road Campus, Johannesburg, South Africa

Emaculate Ingwani, University of Venda, Department of Urban and Regional Planning

Thohoyandou, South Africa

ID 450 A Managerial Challenge: Selecting an appropriate model for implementing the Corrosion Management System, Case Study: National Iranian Gas Company

Ali Massaeli, Corrosion Management System Project Manager, Technical Inspection and Control Department, National Iranian Gas Company, Tehran, Iran

Reza Mesgarian, Head of Process Engineering, Coordination and Production Monitoring Department, National Iranian Gas Company, Tehran, Iran

ID 451 Re-Designing a Gear Using Reverse Engineering

Hoor Alhafeiti, Aiman Ziout, Athari Alsaadiya & Asma Alhebsi, Department of Mechanical Engineering, United Arab Emirates University, Alain, UAE

ID 452 Municipal solid waste collection and disposal using traveling salesman problem: A Review

Ezugwu Loveth Anaezi and Stephen C. Nwanya, Department of Mechanical Engineering, University of Nigeria Nsukka, Nigeria

Paul A. Ozor, Department of Quality and Operations Management, University of Johannesburg, South Africa

Department of Mechanical Engineering, University of Nigeria Nsukka, Nigeria

ID 453 Developing a Planning Model for Supplying First Aid Medicine after Cyclone in Southwest Coastal Areas of Bangladesh

Tamanna Islam and Salim Hossain, Department of Industrial and Production Engineering, Khulna University of Engineering & Technology, Dhaka, Bangladesh

ID 454 Multi-objective Optimization of Dynamic Electricity Generation-mix with CO2 Reduction Target: A Case Study of South Africa

Zakaria Yahia and Pule Kholopane, Department of Quality and Operations Management, University of Johannesburg, Johannesburg, South Africa

ID 455 Multi-objective Preemptive Optimization of Residential Load Scheduling Problem Under Price and CO2 Signals

Zakaria Yahia and Anup Pradhan, Department of Quality and Operations Management, University of Johannesburg, Johannesburg, Soutsh Africa

ID 456 TAKA News Search Engine: A Proposed DEMO-based Performance Evaluation System

Tarek Fatyani, R&D Department, SMAGROUP LLC, Chiba, Japan
Zakaria Yahia, Department of Quality and Operations Management, University of Johannesburg, Johannesburg, South Africa

ID 457 A Study of Workforce Assignment Problem in Lean Factory on Machine Tool Industry

JrJung Lyu, Ching-Hsiang Tung, and Chia-Wen Chen, Department of Industrial and Information Management, National Cheng Kung University, Tainan, Taiwan

ID 458 Work Organization through Methods Engineering and Time Study to Increase Productivity in a Floriculture Company: A Case Study

Carlos A. Machado Orges, Leandro L. Lorente Leyva and Juan C. Mugmal Iles, Facultad de Ingeniería en Ciencias Aplicadas, Universidad Técnica del Norte, Ibarra, Ecuador
Juan P. Tafur Guisao, Escuela de Ciencias Químicas e Ingeniería, Universidad Yachay Tech, Urcuquí, Ecuador
Ivet Challenger Pérez, Facultad de Ingeniería Informática y Matemática, Universidad de Holguín, Cuba

ID 459 On Applying Big Data to Transform the Inspection Lines

JrJung Lyu, Chia-Wen Chen, and Hong Yu Chen, Department of Industrial and Information Management, National Cheng Kung University, Tainan, Taiwan (R.O.C.)

ID 464 Reducing Screen Printing Lead Time: A Quality Control Circle Approach

Md. Mamunur Rashid and Sharif Ahmed, Department of Industrial & Production Engineering, Department of Yarn Engineering, Bangladesh University of Textiles, Dhaka-1208, Bangladesh

ID 465 Academic – Industry Partnership to Develop Tomorrow's Engineering Innovators

Carol S. Gattis, Ph.D., Associate Dean Emeritus, Honors College, Adjunct Associate Professor, Industrial Engineering, University of Arkansas, Fayetteville, AR 72701, USA
Karl D. Schubert, Ph.D., FIET, Research Professor, College of Engineering, Director of Research for Innovation and Data Science Initiatives for the College of Engineering and the Sam M. Walton College of Business, University of Arkansas, Fayetteville, AR 72701
Michele Cleary, Evaluation and Reporting Consultant, Cleary Scientific Intelligence, LLC, Minneapolis, MN 55410

ID 466 Development of Post-Consumer Polymer Suppliers

Andrés R. Cruz Herrera, Jeanette del P. Ureña Aguirre and Leandro L. Lorente Leyva, Facultad de Ingeniería en Ciencias Aplicadas, Universidad Técnica del Norte, Ibarra, Ecuador

ID 467 Optimal Control Applied to an Economic Model for Reducing Unemployment Problems in Bangladesh

Md. Haider Ali Biswas, Uzzwal Kumar Mallick, Mst. Shanta Khatun, Mathematics Discipline, Khulna University, Khulna-9208, Bangladesh
Kazi Masum Parves, Joint Director, Bangladesh Bank, Khulna, Bangladesh

ID 468 Implementation of Green Supply Chain Management (Gscm) Practices among Malaysian Smes

Alina Shamsuddin and Eta Wahab, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Johor, Malaysia

ID 469 An Interactive Analytic Hierarchy Process for Product Recommendation: A Case Study in Studio Recording

Sudatip Puengrusme, Stamford International University, Bangkok 10110, Thailand
Udom Janjarassuk, Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang, Bangkok 10520, Thailand

ID 470 Effects of Working Environment and Stress on Sick Building Syndrome among Manufacturing Employees

Nor Hazana Abdullah, Eta Wahab, Alina Shamsuddin and Nor Aziati Abdul Hamid, Faculty of Technology Management, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Johor 86400 MALAYSIA

ID 471 A Strategic Model to Improve the Last mile delivery performance in Ecommerce Parcel Delivery

Gayani Bopage, Julian Nanayakkara and Kasuni Vidanagamachchi, Department of Industrial Management, Faculty of Science, University of Kelaniya, Sri Lanka

ID 472 Modeling and Assessment of Carbon Dioxide Concentration Emitted from the Coal-based Power Plant in Bangladesh

Arindam Kumar Paul and M. Haider Ali Biswas, Mathematics Discipline, Khulna University, Khulna-9208, Bangladesh

ID 473 Analysis Of Designing Job Shop Scheduling In Pt. Harmony Of Four Selaras With Tabu Search Algorithm Method To Minimize Production Makespan

Lina Gozali, Lilyana Jap, Meisya Anggriani Halim, Industrial Engineering Department, Faculty of Engineering, Universitas Tarumanagara, Jakarta, 11440, Indonesia

ID 475 Influence of the type of Pipeline Integrity Assessment on the effectiveness of repairs

Benmounah Amar, Department of Transport and Equipment of Hydrocarbons, University Mhamed Bougara Boumerdas 35000. Algeria

ID 476 Applications of Nanoparticles via Laser Ablation in Liquids: a review

Fawaz M. Abdullah, Abdulrahman M. Al-Ahmari, and Saied Darwish, Industrial Engineering Department, King Saud University, Riyadh, 11421, KSA

Madiha Rafaqat, Department of Industrial and Manufacturing Engineering, University of Engineering and Technology, Lahore, Pakistan

ID 477 Recycling Enhancement Efforts Using Mobile Application: Novel Approach in Penang, Malaysia

Prashanth Beleya, Geetha Veerappan, Tan Zheyan and Poh Chia Ming, Universiti Tunku Abdul Rahman, Malaysia

ID 478 Performance Evaluation of Integrated Moisture Sensor with ZigBee Mesh Network for Automated Irrigation System

Che Zalina Zulkifli, Nursyahida Mohd Noor and Nur Hazlina Abu Hassan, Computing Department, Sultan Idris Education University, Perak, Malaysia

ID 479 Factors Influencing Knowledge Transfer activities in Enterprise Resource Planning Success for Food Manufacturing

Nur Izzah Muallah, A.H. Nor Aziati, T. Rosmaini, A. Nor Hazana and S.W. Chan, Faculty of Technology Management & Business, University of Tun Hussein Onn Malaysia, 86400, Parit Raja, Johor, Malaysia

ID 480 Incorporating Dynamic Potential market in Innovation Diffusion Model Using Stochastic Differential Equation

Kuldeep Chaudhary and Pradeep Kumar, Department of Applied Mathematics, Amity Institute of Applied Sciences, Amity University, Noida, 201301, India

Sunita Mehta, Department of Mathematics, Kalindi College, University of Delhi, India

ID 487 Innovative Undergraduate Degree Programs in Data Science and Business Analytics

Shahram Taj, Florida Polytechnic University, Lakeland, Florida, United States

ID 488 The Design Of Hybrid Flowshop Scheduling System With Nawaz Enscore Ham (Neh) And Campbell Dudek Smith (Cds) Algorithm To Minimize Makespan In Pt. Plasindo Elok

Liesly Liesly, Lina Gozali, and Lilyana, Department of Industrial Engineering, Tarumanagara University, Jakarta, Indonesia

ID 489 State of Model Risk: A Comprehensive Review of Model Validation and Model Risk Management Approaches in the Age of Machine

Murphy Choy, Edinburgh Business School, Heriot Watt University

Ma Nang Laik, School of Business, Singapore University of Social Science, Singapore

ID 490 Stochastic Analysis of a Three Unit Series Parallel System

Venkata S S Yadavalli, Department of Industrial & Systems Engineering, University of Pretoria, Pretoria, South Africa

ID 491 Sustainable Construction through the Application of Lean Principles

Mary Yrene B. Paguio, ChE, OD, MS Industrial Engineering & Management Student, PUP, Philippines

ID 492 Sustainable Model Impact of Reclamation in Coastal North Jakarta (Case Study: A Fishing Village in Kamal Muara, Penjaringan)

Lilyana, Naufal Sanca L, Lina Gozali, Teuku Yuri M Zagloel and Tri Edhi Budhi Soesilo, Tarumanagara University, Jakarta, Indonesia

ID 493 Value-at-Risk and Modofied Value-at-Risk under Asset Liability by Using Time Series Approach

Sukono, Betty Subartini and Herlina Napitupulu, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia

Yuyun Hidayat, Department of Statistics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia

Adam Sukma Putra, Department of Physics, Faculty of Mathematics and Natural Sciences, Universitas Gajah Mada, Indonesia

Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 494 Reinsurance Loss Model at Individual Risk for Short Term in Life Insurance

Sukono, Endang Soeryana Hasbullah and Alit Kartiwa, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia

Yuyun Hidayat, Department of Statistics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia

Subiyanto, Department of Marine Science, Faculty of Fishery and Marine Science, Universitas Padjadjaran, Indonesia

Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 495 A New 3-D Chaotic System with Three Nonlinearities, its Adaptive Synchronization and Circuit Simulation

Aceng Sambas, Department of Mechanical Engineering, Universitas Muhammadiyah Tasikmalaya, Tasikmalaya, Indonesia
Sundarapandian Vaidyanathan, Research and Development Centre, Vel Tech University, Chennai, Tamil Nadu, India
Sukono, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Subiyanto, Department of Marine Science, Universitas Padjadjaran, Indonesia
Mustafa Mamat, Faculty of Informatics and Computing, Universiti Sultan Zainal Abidin, Kuala Terengganu, Malaysia
Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 496 A New 4-D Hyperchaotic System with a Two-Scroll Attractor, its Adaptive Control and Circuit Simulation

Sukono F, Department of Mathemetics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran Bandung Jawa Barat, Indonesia

ID 497 Numerical Simulation of Finite Difference Time Domain (FDTD) for Solving the Boundary Value Problem (BVP) in Earth Layer

Adam Sukma Putra, Idham Syah Alam, Department of Physics, Faculty of Mathematics and Natural Sciences, Universitas Gajah Mada, Indonesia
Sukono, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Wahyu Srigutomo, Department of Physics, Faculty of Mathematics and Natural Sciences, Bandung Institute of Technology, Indonesia
Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 498 The Application of Floyd-Warshall Algorithm in Solving Shortest Path Problem for Fire Evacuation System at High Rise Building (Case Study at eL Royale Hotel Bandung)

Sukono F, Department of Mathemetics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran Bandung Jawa Barat, Indonesia

ID 499 Regional Lagging Analysis in Indonesia Using Binary Logistic Regression

Titi Purwandari and Yuyun Hidayat, Department of Statistics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Sukono and Herlina Napitupulu, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 500 Profile of West Java Province Based on School Participation Rate Using Biplot's Principal Component Analysis

Titi Purwandari and Yuyun Hidayat, Department of Statistics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Sukono and Herlina Napitupulu, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 501 Identification of Countries that Have Similarities with Indonesia in the Context of Rice Crisis Using Multidimensional Scaling

Titi Purwandari and Yuyun Hidayat, Department of Statistics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Sukono and Herlina Napitupulu, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 502 Grouping of Regencies and Cities in West Java Using the Biplot's Principal Component Analysis

Yuyun Hidayat and Titi Purwandari, Department of Statistics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Sukono and Herlina Napitupulu, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 503 Listing all potential maximal cliques of a graph

Mochamad Suyudi and Sukono, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Mustafa Mamat, Faculty of Informatics and Computing, Universiti Sultan Zainal Abidin, Tembila Campus, 2200 Besut, Terengganu, Malaysia
Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Johor, Malaysia

ID 504 Eigenvalues and the max-cut problem

Mochamad Suyudi and Sukono, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Mustafa Mamat, Faculty of Informatics and Computing, Universiti Sultan Zainal Abidin, Tembila Campus, 2200 Besut, Terengganu, Malaysia
Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Johor, Malaysia

ID 507 New Ordering Approach Specific Airline Industry

Redemtor V. Cariño, Master of Science in Industrial Engineering Management, Polytechnic University of the Philippines

ID 508 The Identification of Material Management Risk Factors Affecting to The Time Performance in Fly Over Project Construction

Hafnidar A. Rani and Tamalkhani Syammaun, Civil Engineering Department, Faculty of Engineering, Universitas Muhammadiyah Aceh, Banda Aceh, Aceh, Indonesia

ID 509 Problems of demand and effects in portfolio based selection of utility functions

Riaman, Sukono and Eman Lesmana, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran,

Indonesia

Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 513 Successful Implementation of Separate Layer Steam Injection to Enhance Oil Production from Comingle Layers- FNE-28 Case Study

Husham A. Ali Elbaloula Petro-Energy E&P, Dr. Tagwa A. Musa –Sudan University of Science & Technology, Luo Shengyong – GWDC

ID 514 Comparing Products and (Medical) Services on Few Organizational Variables: A Theoretical Framework

Dr. Sheela R Sharma, Rama Medical College, Mandhana, Kanpur, India
Prof. RRK Sharma and Ajay Jha, Dept of IME, IIT Kanpur, Kanpur, India

ID 515 Management Control Systems (MCS) in Hospitals

Dr. Sheela R Sharma, Rama Medical College, Mandhana, Kanpur, India
Prof. RRK Sharma and Ajay Jha, Dept of IME, IIT Kanpur, Kanpur, India

ID 516 ERP For Service Sector And Medical Service

Dr. Sheela R Sharma, Rama Medical College, Mandhana, Kanpur, India
Ajay Jha and Prof. RRK Sharma, Dept of IME, IIT Kanpur, Kanpur, India

ID 517 Multi Agent System For Hospitals

Dr. Sheela R Sharma, Rama Medical College, Mandhana, Kanpur, India
Ajay Jha and Prof. RRK Sharma, Dept of IME, IIT Kanpur, Kanpur, India

ID 518 Literature review of Dynamic Vehicle Routing Problem and future perspectives

Kaadiri Yahia and Omar Drissi Kaitouni, Engineering, Management and Systems' optimization Laboratory, Mohammadia School of Engineers, Avenue Ibn Sina B.P 765, Agdal -Rabat

ID 521 Data Screening Technique for Developing a Crude Oil Price Forecasting Models for Petroleum Industry

Abdul Talib Bon and Nuhu Isah, Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia, Parit Raja, Batu Pahat, Malaysia

ID 522 ASEAN 2025 and KM Approach to Improve Business Lawyer Competency: A Case Study of Chiang Mai University

Chayamarnie Bhiriyawanit, Worawit Janchai, Pitipong Yodmongkol and Anurak Panyanuwat, College of Arts, Media, and Technology, Chiang Mai University, Muang, Chiang Mai, 50200, Thailand

ID 523 Strategy for Developing MSMEs Performance Using Balanced Scorecard Model Measurement Based on Information Technology

Achmad Zakki Falani, Department of Informatic Engineering, Narotama University, Surabaya, East Java, Indonesia
Arasy Alimudin and Elok Damayanti, Department of Management, Narotama University, Surabaya, East Java, Indonesia
Abdul Talib Bon, Department of Production and Operation Management, Universiti Tun Hussein Onn, Parit Raja, Johor, Malaysia

ID 524 Optimal Investment Timing and Liquidity

Michi Nishihara, Graduate School of Economics, Osaka University, Osaka, Japan

ID 525 Controlling Schedule of Fiber to the Home (FTTH) Project Using Critical Path and Crashing Method

Catur Fajri Augyhana, Ika Arum Puspita and Wawan Tripiawan, Industrial Engineering, Industrial and System Engineering Faculty, Telkom University, Bandung, 40257, ID

ID 526 A Principal Criteria Searching Approach Based Leanness Assessment Method Considering Industrial Diversity

Geng Cui, Fei Xie and Cunrong Li, Department of Industrial Engineering, School of Mechanical and Electronics Engineering, Wuhan University of Technology

ID 527 Organizational Readiness to Change in Research Institute Case Studies

Mia Rahma Romadona, Research Center for Development of Science and Technology, Indonesian Institute of Sciences, Jakarta, Indonesia

ID 530 A New Metaheuristics for Solving Traveling Salesman Problem: Partial Comparison Optimization

Antono Adhi, Industrial Engineering Department, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia,
Industrial Engineering Department, Universitas Stikubank, Semarang, Indonesia
Budi Santosa and Nurhadi Siswanto, Industrial Engineering Department, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia

ID 531 A Strategic Model to Improve the Last Mile Delivery Performance in E-commerce Parcel Delivery

Gayani Bopage, Julian Nanayakkara and Kasuni Vidanagamachchi, Department of Industrial Management, Faculty of Science, University of Kelaniya, Sri Lanka

ID 533 Application of ECRS Technique to Reduce Waste in Case of Detergent Packaging Process

Noppadol Sriputtha, Production Engineering Program, Faculty of Engineering, Thai-Nichi Institute of Technology, Bangkok 10250, Thailand
Jittanan Kositwat, Production Staff, Production Department, Lion Corporation (Thailand) Limited, Chonburi, Thailand

ID 534 Role of IOT and Big Data Science in Reusable Packaging Logistics Optimization

Bryan Jay Capistrano, Polytechnic University of the Philippines, Manila NCR, Philippines

ID 535 The Completeness of p-Summable Sequences as 2-Normed Spaces

Muhammad Ryan Sanusi, Master Program in Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Bandung, Indonesia
Shelvi Ekariani and Sukono, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Bandung, Indonesia
Subiyanto, Department of Marine, Faculty of Fishery and Marine Sciences, Universitas Padjadjaran, Bandung, Indonesia
Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 536 Application of Spatial Weighting Matrix of GSTAR by Using CLARANS Clustering on Farmer Exchange Rates in 32 Provinces in Indonesia

Annisa Azizah, Master Program in Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Rini Cahyandari and Arief Fatchul Huda, Department of Mathematics, Faculty of Science and Technology, Universitas Islam Negeri Sunan Gunung Djati Bandung, Indonesia
Sukono, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Subiyanto, Department of Marine Sciences, Faculty of Fishery and Marine Sciences, Universitas Padjadjaran, Indonesia
Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 537 Application of Graph Hamilton on Determining the Shortest Route of Trans Metro Bandung

Yusuf Ibrahim Abdallah, Master Program in Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Yani Ramdani and Yurika Permanasari, Department of Statistics, Faculty of Mathematics and Natural Sciences, Universitas Islam Bandung, Indonesia
Sukono, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Subiyanto, Department of Marine Sciences, Faculty of Fishery and Marine Sciences, Universitas Padjadjaran, Indonesia
Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 538 The LASSO (Least Absolute Shrinkage and Selection Operator) Method to Predict Indonesian Foreign Exchange Deposit Data

Trisha Magdalena Adelheid Januaviani, Master Program in Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran , Bandung, Indonesia
Nurul Gusriani, Khafsah Joebaedi and Sukono, Department Program in Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Bandung, Indonesia
Subiyanto, Department of Marine Science, Faculty of Fishery and Marine Science, Universitas Padjadjaran, Bandung, Indonesia
Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 539 Analysis Students Abilities in Completing Mathematical Problems Dimension Three in Junior High School

Rahmi Wiganda Elastika, Master Program in Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Zulkarnain, Mefa Indriati and Sukono, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia
Subiyanto, Department of Marine Sciences, Faculty of Fishery and Marine Sciences, Universitas Padjadjaran, Indonesia
Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 540 Developing MSMEs' Businesses Performance Using Balanced Scorecard Model Measurement Based on Information Technology

Achmad Zakki Falani, Faculty of Informatic Engineering, Narotama University, Surabaya, Indonesia
Arasy Alimudin, Agus Sukoco and Elok Damayanti, Faculty Economy and Business, Narotama University, Surabaya, Indonesia
Abdul Talib Bon, Fakulti Pengurusan Teknologi dan Perniagaan, Universiti Tun Hussein Onn Malaysia (UTHM), Johor, Malaysia

ID 541 100% Reduction Of Ogp Inspection Waiting Time At Xyz Electronics Corporation Using Monte Carlo Simulation, Heijunka Device And Military 105e Sampling Standard

Mary Rose O. Arnejo, Department of Industrial Engineering, Cebu Institute of Technology – University, Cebu City, Philippines

ID 542 A Critical Review on the Drivers and Barriers for Enabling Smart Cities

N.S. Jayasena, H. Mallawaarachchi and K.G.A.S. Waidyasekara, Department of Building Economics, University of Moratuwa, Sri Lanka

ID 543 Strategies to Adopt Zero Waste Concept in the Construction Industry

K.L.A.K.T. Liyanage, K.G.A.S. Waidyasekara and H. Mallawarachchi, Department of Building Economics, Univesity of Moratuwa, Sri Lanka

ID 544 Performance Evaluation of Sustainable Innovation Practices in Food Supply Chain Using Best-Worst Method

Jyoti Darbari, Rashi Sharma and P.C. Jha, Department of Operational Research, University of Delhi, India
Venkata Seshachala Sarma Yadavalli, University of Pretoria, South Africa

ID 545 An Interpretive Structural Model for Analyzing the Impact of Sustainability Driven Supply Chain Strategies

Rahul Solanki and P.C. Jha, Department of Operational Research, University of Delhi, India
Jyoti Darbari, Department of Mathematics, Lady Shri Ram College, University of Delhi, India
Vernika Agarwal, Amity International Business School, Amiy University, Noida, Uttar Pradesh, India

ID 546 Waste Plastic Material As An Additional Material For Hollow Foundation Test Concrete

Sri Wiwoho Mudjanarko and Prastyo Adi Putro, Departement of Civil Engineering, Universitas Narotama, Surabaya,60117, Indonesia
Eko Julianto, Politeknik Perkapalan Negeri Surabaya, Surabaya, Indonesia
Dani Harmanto, Departement of Mechanical Engineering, Derby University, Derby, UK
Firdaus Pratama Wiwoho, Departement of Environmental Engineering, Institut Teknologi Sepuluh Nopember, Surabaya, 60117, Indonesia

ID 547 Development of Food Safety Plan for Food Parks in the Philippines

Madonna F. Andrada, Rolph Fahad Christopher C. Bigtas and Manuel U. Ribo, Jr., School of Industrial Engineering and Engineering Management, Mapua University, Intramuros, Manila

ID 548 An Ergonomic Design of Birthing Chair for Public Maternity Hospitals in the Philippines

Rianina D. Borres and Angeli K. Javier, School of Industrial Engineering and Engineering Management, Mapua University, Intramuros, Manila

ID 549 Ergonomic Design of NLEX Toll Booth in the Philippines

Jenalyn Shigella G. Yandug and Marvin L. Cruz, School of Industrial Engineering and Engineering Management, Mapua University, Muralla St., Intramuros, Manila

ID 550 Prioritization of Service Quality Dimensions towards Customer Retention for Casual-Dining Restaurants

Madylaine G. Delfin, Kenneth G. Tonico and Adrian Allan Barisoro, School of Industrial Engineering and Engineering Management, Mapua University, Intramuros, Manila

ID 551 Predictive Model Affecting the Fatigue Condition of Drivers in the Philippines

Rianiña D. Borres and Joymie R. Javier, School of Industrial Engineering and Engineering Management, Mapua University, Intramuros, Manila

ID 552 Development of Supply Chain Model for Small Scale FarmerProducers of the Carrageenan Industry in the Philippines

Mary Christy O. Mendoza and Raphael Joesh P. Layug, School of Industrial Engineering and Engineering Management, Mapua University, Intramuros, Manila

ID 553 Effects of Internal and External Sources of Distraction to the Driving Performance of Filipino Drivers

Rex Aurelius C. Robielos and Ybeth Angelyn P. Tuliao, School of Industrial Engineering and Engineering Management, Mapua University, Intramuros, Manila

ID 554 In-Depth Analysis of Workplace Accidents in Food Processing Company in the Philippines

Rex Aurelius C. Robielos, Kenn Redric P. Leyba and Charlene L. Ocampo, School of Industrial Engineering and Engineering Management, Mapua University, Intramuros, Manila

ID 555 Good mechanism for better live

Gunawan Gunawan, Surabaya, Indonesia

ID 556 Analysis Using of Lean Manufacturing to Minimize Waste

Nurhayati Sembiring and Muhammad Irvan, Department of Industrial Engineering, Faculty of Engineering, Universitas Sumatera Utara, Sumatera Utara, Indonesia

ID 557 Cost Reduction in Case of Forklift's Tire Replacement using VA/VE Technique

Noppadol Sriputtha, Production Engineering Program, Faculty of Engineering, Thai-Nichi Institute of Technology, Bangkok 10250, Thailand

Boonsin Nadondu, Facility and Layout Section, Nissan Trading (Thailand) Co., Ltd., Chonburi, Thailand

ID 558 Factors Affecting the Performance of Cold Chain for Export of Thailand's Longan

Narathip Titlo, Graduate program in Logistics Engineering and Supply chain Management, Department of Industrial Engineering, Chiang Mai University, Chiang Mai, Thailand
Apichart Sopadang, Department of Industrial Engineering, Excellence Center in Logistics and Supply Chain Management, Chiang Mai University, Chiang Mai, Thailand

ID 559 A Data Analytics Model of Bankability versus Economic Factors: East Java Region Case

Hana Aulia Diah Ramadhani and DR.Eng. Erwin Widodo. S.T., M.Eng., Department of Industrial Engineering, Institut Teknologi Sepuluh Nopember, Surabaya, 602111, Indonesia

ID 560 Performance Improvement of Shrimp Feed Raw Materials in Green Supply Chain

Juliza Hidayati, Department of Industrial Engineering, Faculty of Engineering, Universitas Sumatera Utara, Medan, Indonesia
Sawarni Hasibuan, Master of Industrial Engineering Program, Universitas Mercu Buana, Jakarta, Indonesia

ID 561 Integration of Contract and Spot Market Carrier under Demand Uncertainty

Lala Ayu Kantari, I Nyoman Pujawan and Niniet Indah Arvitrida, Department of Industrial Engineering, Institut Teknologi Sepuluh Nopember, Surabaya 60111, Indonesia

ID 562 Carbon Pricing as a Policy Instrument to Reduce Energy Based Emissions in Apparel Sector

T.L.W. Karunaratne and T.S. Jayawickrama, Department of Building Economics, University of Moratuwa, Sri Lanka

ID 563 Issues in Implementing Business Process Reengineering (BPR) Projects

M.F.F. Fasna & Sachie Gunatilake, Department of Building Economics, University of Moratuwa, Sri Lanka

ID 565 An Assessment for the Use of Green Building Information Modelling for Sustainable and Green Buildings – Sri Lankan Perspective

H.W.T. P. Rathnasiri and H.S. Jayasena, Deparment of Building Economics, University of Moratuwa , Sri Lanka

ID 566 Service Quality Improvement in Courier Service: Need for Lean Principles

N. Botsane, P.A. Ozor and Charles Mbohwa, Department of Quality and Operations Management, Faculty of Engineering and the Built Environment, University of Johannesburg, Johannesburg, South Africa

ID 567 E-Toll Information Technology In Gto And Hybrid In Toll Gate Menanggal – Surabaya

Rachmatdhany Zyandra Aziz, Sri Wiwoho Mudjanarko, Atik Wahyuni and Hendro Sutowijoyo, Departement of Civil Engineering, Universitas Narotama, Surabaya,60117, Indonesia
Eko Julianto, Politeknik Perkapalan Negeri Surabaya, Surabaya, Indonesia
Slamet Winardi and Wahyu Mulyo Utomo, Departement of Computer System, Universitas Narotama, Surabaya,60117, Indonesia
Dani Harmanto, Departement of Mechanical Engineering, Derby University, Derby, UK

ID 568 A reverse logistics network optimization model for residual OTR tires from the mining industry: A Colombian case study

Jorge Oyola and René Amaya-Mier, Department of Industrial Engineering, Universidad del Norte, Barranquilla, Atlántico 081007, Colombia

ID 569 The Improvement of Technology Utilization in The Framework of the Competitiveness and Sustainability of Indonesia Palm Oil Industry

Sawarni Hasibuan, Master of Industrial Engineering Program, Universitas Mercu Buana, West Jakarta 11650, Indonesia
Juliza Hidayati, Department of Industrial Engineering, Faculty of Engineering, Universitas Sumatera Utara, Medan, Indonesia

ID 570 Integration of 360-degree Feedback Methods and AHP for Employee Performance Measurement

Much. Djunaidi, Virna S.D. Kumaraningrum, Indah Pratiwi, and Hafidh Munawir, Department of Industrial Engineering, Universitas Muhammadiyah Surakarta, Sukoharjo, Central Java, 57162, Indonesia

ID 571 Conflict Avoidance in Construction Stage through Proper Practice in Pre Contract Stage

Kanishka Kajaman, Vijitha Disaratna, Pavithra Ganeshu and Fathima Sabrina Nazeer, Department of Building Economics, University of Moratuwa, Sri Lanka

ID 572 Mathematical Modeling to Predict the Mechanical Properties of Hot Rolled Steel Sheets

Chaovarat Junpradub and Krisada Asawarungsaengkul, Department of Industrial Engineering, Faculty of Engineering, King Mongkut's University of Technology North Bangkok, Thailand

ID 573 Combining SWOT and PESTLE Model to Assess Kaskus Business Model

Widhiyaningrum, Abel Kristanto Widodo, Moh. Rizal Tahqiqi, A.A.S. Manik and Mahachandra J.M., Departement of Industrial Engineering, Faculty of Engineering, Diponegoro University

ID 574 Development Sophistication Degree of New Components of Technometrics Using Concept Mapping

Novi Marlyana, Department of Industrial Engineering, Universitas Islam Sultan Agung, Semarang, Indonesia
Alva Edy Tontowi and Hari Agung Yuniarto, Department of Mechanical and Industrial Engineering, Universitas Gadjah Mada, Yogyakarta, Indonesia

ID 575 The Impact of Green Supply Chain Management Practices on Operational Performance and Customer Satisfaction

H. K. Dilhani Mallikarathna and C. W. Chathurani Silva, Department of Decision Sciences, University of Sri Jayewardenepura, Gangodawila, Nugegoda, Sri Lanka

ID 576 Ability to Optimizing Shipping Line Operation using Information Technology- A Case Study in Sri Lanka

A.P Preethika Darshani, C.W. Chaturani Silva, Department of Decision Sciences, University of Sri Jayewardenepura, Nugegoda, Sri Lanka

ID 577 An Equity-based Positioning of Domestic Waste Collection Sites for an Equal Waste-induced Disaster Risk

Eko Setiawan, Much Djunaidi, Hafidh Munawir, Alfa Novian Hendranansa Putra, Praditsya Paramitha, Eliza Arrofi Maharani and Bella Brylian, Industrial Engineering Department, Universitas Muhammadiyah Surakarta, Sukoharjo, Central Java, Indonesia

ID 578 Internet of Things, Big Data and Simulation as a Competitive Advantage in the New Age of Industry 4.0

Rafaela Soares dos Santos and Sandro Alberto Vianna Lordelo, Anhanguera University Center, Rio de Janeiro, Brazil

ID 579 Using Petri Net method for assessing safety barriers performance Case study: Oil and Gas Industry

Mouloud Bourareche and Rachid Nait-Said, Institute of Health and Occupational Safety, Laboratory of Research in Industrial Prevention (LRIP), University of Batna, Algeria

ID 580 Multi-Product Multi-Vehicle Inventory Routing Problem with Mixed Integer Linear Programming

Ilyas Masudin, Zaiyin Maghfur and Dian Palupi Restuputri, Industrial Engineering, University of Muhammadiyah Malang, Jawa Timur 65144, Indonesia
Mudrifah, Accounting, University of Muhammadiyah Malang, Jl. Raya Tlogomas 246 Malang, Jawa Timur 65144, Indonesia
Fien Zulfikarijah, Management, University of Muhammadiyah Malang, Jl. Raya Tlogomas 246 Malang, Jawa Timur 65144, Indonesia

ID 581 Design and Development of Advanced Air Purifier Facial Mask

Md. Mamunur Rashid and Sadman Sakib Tushan, Department of Industrial & Production Engineering, Bangladesh University of Textiles, Dhaka-1208, Bangladesh

ID 582 Digital Human Modeling in Ergonomic Risk Assessment of Working Postures using RULA

M.Manzoor Hussain, Department of Mechanical Engineering, Jawaharlal Nehru Technological University, Hyderabad – 500085, Telangana State, INDIA
Qutubuddin S.M., Industrial and Production Engineering Department, P.D.A. College of Engineering, Gulbarga, Karnataka State, INDIA

ID 588 A Knowledge Management Approach to Compare and Develop the ASEAN University Credit Transfer System in Thailand

Chayamarnie Bhiriyawanit, Faculty of Law, Chiang Mai Univeristy, Muang, Chiang Mai, 50200, Thailand

ID 589 Industry 4.0 Gap Analysis for Thai Industries with Association Rules mining

Wimalin Laosiritaworn and Wichai Chattinnawat, Department of Industrial Engineering, Chiang Mai University, Chiang Mai, 50200, Thailand

ID 590 The impact of late payments on the financial performance of a multi-echelon supply chain: a system dynamics modelling approach

Abdelaziz Berradou, Tarik Saikouk and Mohamed Hicham Salah Eddine, University of Rabat, Rabat, Morocco

ID 591 A Study Of Food Waste Behaviour In Tertiary Institution

Emy Ezura Bt. A. Jalil, Technology and Supply Chain Excellence Institute
Chong Wing Ying, Chang See Min and Loo Mei Chen, School of Technology Management and Logistics, College of Business, Universiti Utara Malaysia, Sintok, Kedah, Malaysia

ID 592 The Determination of Patient Appointment Scheduling and Patients' Examination Room Assignment Policies: A Case Study

Ping-Shun Chen, Li-Wen Liu, Ching-Ping Zheng, Department of Industrial and Systems Engineering, Chung Yuan Christian University, Chung Li District, Taoyuan City, 32023, Taiwan, ROC

Wen-Tso Huang, Business School, Department of Financial Management, Minnan Normal University, Xiangcheng District, Zhangzhou City, 363000, China

ID 593 Implementation of Karakuri Kaizen to Improve Productivity and Ergonomics in Wire Rope Industry

Izzat Muhaimin Madisa, Mohd Firdaus Mohd Taib and Norba'ayah Ahmad Reza, Department of Materials, Manufacturing and Industrial Engineering, Faculty of Mechanical Engineering, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor, Malaysia

ID 594 DEA-cross efficiency approach for peer assessment of retail stores' efficiency

Nomita Pachar and P C Jha, Department of Operational Research, University of Delhi, Delhi, India
Anshu Gupta, University School of Management and Entrepreneurship (USME), East Delhi Campus, Delhi Technological University (DTU), Delhi, India

ID 596 The Impact of Waste Management in the Hospitality Industry Johannesburg North, South Africa

Dr E I Edoun, Professor C Mbohwa and Mrs Thobile Yvonne Bhila, Faculty of Engineering and the Built Environment, Department of Quality and Operations Management, University of Johannesburg, Auckland Park, South Africa

ID 597 Application of Data Mining for Exploring Hidden Patterns in Tuberculosis Patients

Farzad Firouzi Jahantigh and Maryam Ostovare, Department of Industrial Engineering, University of Sistan and Baluchestan, Zahedan, Iran

ID 598 Factors Investigation for the Development of Medical Device towards Sustainable Product

Taisy Mak and Duangpun kritchanchai, Department of Industrial Engineering, Mahidol University, Salaya, Nakhon Pathom, 73170, Thailand

ID 599 Radio Frequency Identification Based Communication of Smart Grid with Advance Metering Infrastructure survey

Muhammad Nauman Sheikh, Department of Electrical Engineering, University College of Engineering and Technology (UCET), The Islamia University of Bahawalpur, Pakistan

ID 600 Analysis of new product development strategies between the green supply chain and non-green supply chain partners (case study: Doosheh Dairy Company)

Hadi Gholizadeh and Nikbakhsh Javadian, Department of Industrial Engineering Mazandaran University of Science and Technology, Babol, Iran

ID 601 Importance of Innovative Transformational Leadership on Employee Engagement in the Mining Industry

M. M. Manyuchi and A. Garg, Department of Management Sciences, School of Management Sciences, Tshwane University of Technology, South Africa

ID 602 Factors Influencing The Success And Failure Of Small And Medium-Sized Enterprises In Tembisa Township, South Africa

Dr E I Edoun, Professor C Mbohwa and Mrs Thobile Yvonne Bhila, Faculty of Engineering and the Built Environment, Department of Quality and Operations Management, University of Johannesburg, Auckland Park, South Africa

ID 603 Engineering Education and Self Dependence: A Nigerian Experience

Charles Mbohwa, Department of Quality and Operations Management, University of Johannesburg, South Africa
Paul A. Ozor, Department of Quality and Operations Management, University of Johannesburg, South Africa
Department of Mechanical Engineering-Industrial Engineering and Management, University of Nigeria Nsukka, Nigeria

ID 604 Detection & Diagnosis Of Malignancy By Laser Induced Fluorescence Spectra (LIF)

Mrs. Priya Sachin Deole, Department of physics, G.S.Tompe Art's, Comm. & Science College,Chandur Bazar, Dist. Amravati (M.S) India
Mr. Nachiket Sachin Deole and Mrs. Manasi Vyankatesh Ghamande, Department of Engineering Sciences and Humanities, Savitribai Phule University, Pune, India

ID 605 Assessing the Effects of Sustainability Practices on Product Life Cycle- Clustering Approach

Abdul Salam Khan, NUST Business School, National University of Sciences and Technology, NUST, Islamabad

ID 606 Supply Chain Management of Facility Operations and Maintenance Function in Apparel Sector

F.N. Abdeen, Y.G. Sandanayake and T. Ramachandra, Department of Building Economics, University of Moratuwa, Sri Lanka

ID 607 Maintenance Scheduling and Optimization of Wind Parks: Models and Methods

Mahmood Shafiee, Department of Energy and Power, Cranfield University, Bedfordshire MK430AL, UK

ID 608 A Conceptual Framework to Optimise the Impact of Embodied Energy and Operational Energy in Buildings during the Design Stage

Tennakoon G.A, Waidyasekara K G.A.S and Ekanayake B.J, Department of Building Economics, University of Moratuwa, 10400, Moratuwa, Sri Lanka

ID 617 The Impact Of Customized Service And Guest Satisfaction In The Tourism And Hospitality Industry

Mrs Thobile Yvonne Bhila, Faculty of Engineering and the Built Environment, Department of Quality and Operations Management, University of Johannesburg, Auckland Park, South Africa

ID 618 Relief Demand Modeling Using Bayesian Approach to Coordinate Humanitarian Logistics Planning

Mohammad Anwar Rahman, Central Connecticut State University, New Britain, Connecticut, USA

ID 619 The Effectiveness of Total Quality Management and Operations Performance at a Bakery Firm in The City of Tshwane, Pretoria South Africa

Syria Sibongile Chauke, EI Edoun and Charles Mbohwa, Quality and Operations Management, University of Johannesburg, RSA

ID 620 The Essence of Communication and Its Operationalisation On Managerial Effectiveness

Nkube Eva Masetlwa, EI Edoun and Mbohwa, Department of Quality and Operations Management, University of Johannesburg, South Africa

ID 621 The Essence of Total Quality Management Philosophies in Business

Sibongile Chauke, EI Edoun and Mbohwa, Quality and Operations Management, University of Johannesburg, South Africa

ID 622 Analyzing the Impact of Location Factors on Building Construction Cost in Sri Lanka

Thulasimaaran Parameswaran, T.S. Jayawickrama and D.G. Melagoda, Department of Building Economics, University of Moratuwa, Moratuwa, 10400, Sri Lanka

ID 623 Development of The P I N T A R Concept for Designing Core Competencies Using The Malcolm Baldrige Performance Excellence Approach The Description Analysis At Third Party Logistics Company

Sri Witjaksono Widiadibrata, Doctoral Management Program, Mercu Buana University, Jakarta, INDONESIA

ID 624 Classification of Bearing Fault Location and Severity Using Cascade ANNs with Statistical and Spectral Features

Punyisa Kuendee and Udom Janjarassuk, Department of Industrial Engineering, Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand

ID 628 Forecasting at completion: Introduction of new method and comparing it with the method of Earned Schedule

Ali Maaleki, MSc Social & Economical engineering, NO 501, Enterance 3, Block 3, Baharan Complex, Av bayat, Shahr-e-rey, Tehran
Kaveh mohammad cyrus, Asistant Professor, Amirkabir university, Tehran, Iran
Davoud Gholamiangonabadi, Department of Industrial Engineering and Management Systems, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran

ID 629 Feature Selection and Machine Learning Classification for Live P2P Traffic

Haitham A. Jamil, University of Elimam Elmahdi, Kosti, Sudan
Bushra M. Ali, University of Technology Malaysia, Johor, Malaysia

ID 630 Identification of Opinion Leadership: A Literature Review

L.M.B.N. Kolugala and H.S. Jayasena, Department of Building Economics, University of Moratuwa, Sri Lanka

ID 631 An Equity-based Positioning of Solid Waste Collection Sites for an Equitable Waste-induced Disaster Risk

Eko Setiawan, Much Djunaidi, Hafidh Munawir, Alfa Novian Hendranansa Putra, Praditsya Paramitha, Eliza Arrofi Maharani and Bella Brylian, Industrial Engineering Department, Universitas Muhammadiyah Surakarta, Sukoharjo, Central Java, Indonesia

ID 632 The Analysis of Pros and Norms of Outsourcing Logistics Operational Activities in the Construction Industry in South Africa

Katlego Frans Letsoko and Xhanti Dyonase, Department of Operations Management and Quality Assurance at the University of Johannesburg, South Africa

ID 633 Human Error Assessment in the Accident Causations Experienced among Vehicle Drivers in the Philippines

Gann Sebastian B. Quiban, Bryan D. Caventa, Patricia Paula H. Corpuz, Francesco Nicolai L. Datu, Rica Jonell A. Millet and Yoshiki B. Kurata, Department of Industrial Engineering, Technological Institute of the Philippines, Quezon City, Philippines

ID 634 Occupational Health and Issue in The Low Back Pain Among Filipino – Aged People Through Ordinal Logistic Regression

Angelo M. Alindogan, Felix John F. Amin, Nicole P. Clave, Queenie Colleen Guadalupe, Lynnette P. Salas, Ritz Jerard A. Tan, Arriane A. Palisoc and Yoshiki B. Kurata, Department of Industrial Engineering, Technological Institute of the Philippines, Quezon City, Philippines

ID 635 Conceptual Facebook Model to Mitigate the Problem of Obesity among Sudanese Females

Ghada Ahmad Abdelguiom, Information System Dept., Faculty Computing, UTM

Haitham A. Jamil, Faculty of Computer Science and Information Technology, University of Elimam Elmahdi, Kosti, White Nile, Sudan

ID 636 What are the factors affecting the successful implementation of Industrial engineering projects or the application of Industrial engineering tools and techniques in mining in a South African context?

Tafadzwa Chawasemerwa, University of Witwatersrand, South Africa

ID 637 Design an optimal doctor scheduling system

Tafadzwa Chawasemerwa, University of Witwatersrand, South Africa

ID 638 Competency Mapping for Managers in Governmental Organizations by Shannon entropy

Arash Namvar, M.Sc. Construction engineering and management, Amir Kabir University, Tehran, Iran

Ali Maaleki, M.Sc. Industrial Engineering, Amir Kabir University, Tehran, Iran

Farid Saeedi, M.Sc. Industrial Management, Persian Gulf University, Bushehr, Iran

ID 639 SMEs Managing Organisational Knowledge In The 4IR Era: A Case Study Of Developing Countries

Lawrance Seseni and Charles Mbohwa, Department of Quality and Operations Management, University of Johannesburg, Auckland Park, RSA

ID 640 Design Intervention in Maheshwar Handloom, MP, India

Pratik Mukesh, Master of Design, Design Discipline, PDPM Indian Institute of Information Technology, design and Manufacturing, Jabalpur, M.P., India

ID 641 Fleet management through Vehicle Routing Problem and Multi Depot Vehicle Scheduling Problem: A Literature Review

Ziyad bahou, Equipe MOAD6, Mohammadia School of Engineers, Mohammed V University of Rabat, Morocco

Jamal Elhachmi, Laboratory of Electronics and Telecommunications, Mohammadia School of Engineers (EMI), Rabat, Morocco

ID 642 Analysis of Student's abilities in Completing Mathematical Problems Dimension Three in Junior High School

Rahmi Wiganda Elastika, Master Program in Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia

Zulkarnain, Department of Mathematics, Faculty of teacher training and science, Universitas Riau, Indonesia

Mefa Indriati, Department of Mathematics, Faculty of teacher training and science, Universitas Islam Riau, Indonesia

Sukono, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia

Subiyanto, Department of Marine Sciences, Faculty of Fishery and Marine Sciences, Universitas Padjadjaran, Indonesia

Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 643 Performance Assessment of Hardboard Material's Supplier in PT. Nutech Pundi Artha using Analytic Network Process (ANP) Methods

Muhammad Kholil, Hendri and Farah Devina, Program Studi Teknik Industri, Fakultas Teknik, Universitas mercu Buana, Jl. Meruya Selatan No. 1 Kembangan, Jakarta Barat, Indonesia

ID 644 Production System Disturbances of Heavy Equipment Component Industry (Case Study at PT ABC)

Iveline Anne Marie, Pudji Astuti and Debbie Kemala Sari, Industrial Engineering Department, Faculty of Industrial Technology, Trisakti University Kampus, Jakarta Barat, Indonesia

ID 645 Property Rights on Existing Reconstruction and Development Program Houses (RDP)- Literature review

Mashwama Nokulunga, Gladness Makgobi and Thwala Didi, Department of Construction Management and Quantity Surveying, University of Johannesburg/Johannesburg, South Africa

SARChI in Sustainable Construction Management and Leadership in the Built Environment, Faculty of Engineering and the Built Environment, University of Johannesburg/ Johannesburg, South Africa

ID 650 Big Data Issues and Processing Techniques: A Comprehensive Survey

Aisha Shabbir, Kamalrulnizam Abu Bakar, Raja Zahilah Raja Mohd. Radzi and Sulaiman Azeem, University Technology Malaysia

ID 651 Theoretical examination of sustainability on low cost affordable housing and corporate governance

Mashwama Nokulunga, Gladness Makgobi and Aigbavboa Clinton, Department of Construction Management and Quantity Surveying, University of Johannesburg/Johannesburg, South Africa

SARChI in Sustainable Construction Management and Leadership in the Built Environment, Faculty of Engineering and the Built Environment, University of Johannesburg/ Johannesburg, South Africa

ID 652 Pilot Study: Organizational Creativity in Indonesia's Creative Industries

Budi Hartono and Subagyo, Mechanical and Industrial Engineering Department, Gadjah Mada University, Yogyakarta, Indonesia
Retno Indriartiningtias, Industrial Engineering Department, Trunojoyo University, Bangkalan, East Java, Indonesia
Doctoral Student in Mechanical and Industrial Engineering Department, Gadjah Mada University, Yogyakarta, Indonesia

ID 653 Semiconductor's Automotive Burn-in Testing Improvement by Using Six Sigma

Norzima Zulkifli and Haresh Kumar Shanmugam, Department of Mechanical and Manufacturing Engineering, Faculty of Engineering, Universiti Putra Malaysia

ID 654 Optimization Model to Enhance the Petroleum Distribution Network in Sri Lanka

W.W.N. Sachini, W.M.S.K. Weerabahu and R. Wickramarchchi, Department of Industrial Management, University of Kelaniya, Sri Lanka

ID 655 Newsvendor Models and Biases under Ambiguity

Peeyush Mehta, Indian Institute of Management Calcutta, Operations Management Group, Kolkata, India – 700104
R K Amit, Indian Institute of Technology Madras, Dept. of Management Studies, Chennai

ID 656 Perceptions and Career Choices Linked to the UAE Youths Entrepreneurial Intention

Fauzia Jabeen, Abu Dhabi, University Abu Dhabi, United Arab Emirates

ID 657 Expansion Tale of Al Fanar Restaurant

Fauzia Jabeen, Abu Dhabi University, Abu Dhabi, United Arab Emirates

ID 658 Model-Based Engineering of a Process Wash Plant using SysML: Case study of beneficiation processes in a phosphate industry

Mariem, Ait Bakader Usmba Khouribga, Morocco

ID 659 Analysis of Inventory Control Planning for P-200 Chip (Semi Dull) Using Material Requirement Planning (MRP) Method at Pt. Indonesia Toray Sinthetic

Hendri Hendri, Universitas Mercu Buana, Jakarta Barat, Indonesia
Muhammad Kholil, Universitas Mercu Buana, Jakarta Indonesia
Saiful Munajat, Program Studi Teknik, Industri Fakultas Teknik, Universitas Mercu Buana, Jakarta Barat, Indonesia

ID 660 Gorelax: A User-Ergonomically Designed Backpack for Stress Prone Millennials in the Philippines

Ryan Christopher Malicdem, Technological Institute of the Philippines, Quezon City, Philippines
Chrisjohn Paul Angelo Reyes, Technological Institute of the Philippines, Quezon City, Philippines
Angel Joy Quizon, Technological Institute of the Philippines, Quezon City, Philippines
Yoshiki Kurata, Technological Institute of the Philippines, Quezon City, Philippines

ID 661 Role of Tourism IT Adoption and Tourism Risk Management Orientation On Collaborative Assets: Implications for Sustainable Tourism Supply Chain Performance

Santanu Mandal, Amrita School of Business, Amrita Vishwa Vidyapeetham, Coimbatore, India

ID 662 Influence of IOS Appropriation in Tourism Agility and Tourism Resilience Development: An Empirical Study

Santanu Mandal, Amrita School of Business, Amrita Vishwa Vidyapeetham, Coimbatore, India

ID 663 Advancement of Life Cycle Assessment Towards Eco-design In Ceramic Floor Tile Industry In Sri Lanka

Kamalakkannan Sivappirakasam, University of Peradeniya, Faculty of Engineering Peradeniya, Sri Lanka

ID 664 Academic – Industry Partnership to Develop Tomorrow's Engineering Innovators

Carol Gattis, University of Arkansas, Fayetteville, United States

ID 665 Big Data Tasks Execution Time Analysis Using Machine Learning Techniques

Aisha Shabbir, University Technology Malaysia, skudai, Malaysia
Kamalrulnizam Abu Bakar, skudai, Malaysia
Raja Zahilah Raja Mohd. Radzi, skudai, Malaysia
Muhammad Siraj, Department of Information Engineering & Computer Science, University of Trento, Trento, Italy

ID 666 Analysing the Pros and Norms of Outsourcing Logistics Operational Activities in Construction in South Africa

Katlego Letsoko and Xhanti Dyonase, University of Johannesburg, Johannesburg, South Africa

ID 667 Vertical Wind Turbines as Power Plants at the Railroad Tracks

Andreas Arga Pembangunan Nasional Veteran Jakarta University Bogor Indonesia 667

ID 668 Formulating a Strategic Management of Social E-Commerce through a Combination of SWOT and PESTLE Analysis : Case Study

Abel Kristanto Widodo, Universitas Diponegoro, Semarang, Indonesia

Widhiyaningrum, Diponegoro University, Semarang, Indonesia

Moh Rizal Tahqiqi, Diponegoro University, Semarang, Indonesia

A.A.S. Manik Mahachandra J.M., Diponegoro University, Semarang, Indonesia

ID 669 Application of Spatial Weighting Matrix of GSTAR by Using CLARANS Clustering on Farmer Exchange Rates in 32 Provinces in Indonesia

Annisa Azizah, Universitas Padjadjaran, Sumedang, Indonesia

Rini Cahyandari, Universitas Islam Negeri Sunan Gunung Djati Bandung, Bandung, Indonesia

Arief Fatchul Huda, Universitas Islam Negeri Sunan Gunung Djati Bandung, Bandung, Indonesia

Sukono F, Department of Mathemetics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Bandung, Indonesia

Subiyanto Subiyanto, Universitas Padjadjaran, Sumedang, Indonesia

Abdul Talib, Bon Universiti Tun Hussein Onn Malaysia, Batu Pahat, Malaysia

ID 670 The LASSO (Least Absolute Shrinkage and Selection Operator) Method to Predict Indonesian Foreign Exchange Deposit Data

Trisha Magdalena, Adelheid Januaviani, Nurul Gusriani, Khafsah Joebaedi, Sukono F and Subiyanto Subiyanto, Universitas Padjadjaran, Indonesia

Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Batu Pahat, Malaysia

ID 671 Evaluation of Redesign Layout Using Discrete Event Simulation (DES) Oral

Zakka Ugih Rizqi, Islamic University of Indonesia, Yogyakarta, Indonesia

Rachmat Aulia, Islamic University of Indonesia, Sleman Indonesia 671

ID 672 Lean Manufacturing and Ergonomics in the metallurgical industry: an integrated approach for performance improvement

Ana Luísa Ramos, University of Aveiro (DEGEIT/GOVCOPP), Aveiro, Portugal

Marlene Brito, DEGEIT University of Aveiro, Aveiro, Portugal

Paula Carneiro, University of Minho (ALGORITMI Centre of Engineering), Braga, Portugal

Maria Antónia Gonçalves, Polytechnic of Porto – Research Center of Mechanical Engineering (CIDEM), Porto, Portugal

ID 673 AMBHigh: A User Ergonomic Mobile Learning Application Intended for Business Management Secondary Students in the Philippines

Bert Regin, Santiago Technological Institute of the Philippines, Quezon City, Philippines

ID 674 Heuristics for Course Planning in Degree Programs

Kingsley Gnanendran University of Scranton Scranton United States

Manohar Madan University of Wisconsin-Whitewater Whitewater United States

ID 675 Supply Chain Strategy for Ayamas Food Cooperation Sdn. Bhd.

Mohd Effendi Amran and Habibah Norehan Binti Haron, Razak Faculty of Technology and Informatics, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia

ID 677 Management of Waste Water in Meat Processing Sector: Case Study of Ekurhuleni Abattoir in Johannesburg

Victor Msimango, Paul Amaechi Ozor and Charles Mbohwa, Department of Quality and Operations Management, Faculty of Engineering and the Built Enviroment, University of Johannesburg, South Africa

Paul Amaechi Ozor, Department of Mechanical Engineering, Faculty of Engineering, University of Nigeria Nsukka, Nigeria

ID 678 Red Bin Analysis – The Art of Problem Solving in Manufacturing Industry

Sumit Shandilya and Jaskiran Arora, School of Management, BML Munjal University, Gurgaon, Haryana, India

Kalluri Vinayak, School of Engineering & Technology, BML Munjal University, Gurgaon, Haryana, India

ID 679   Minimizing Mean Weighted Expected Tardiness by Integrating Preventive Maintenance and Production Scheduling Using Genetic Algorithm

Sumiharni Batubara, Iveline Anne Marie, and Cattelya F.H, Industrial Engineering Department, Faculty of Industrial Technology, Trisakti University, Jakarta Barat, INDONESIA

ID 680   A Quantitative Approach for Similarity Comparison of the Terminologies in Standard Documents

Huixing Meng, Department of Industrial Engineering, Tsinghua University, Beijing, China

Kanittha Setthapitayakul, Department of Industrial Engineering, Tsinghua University, Beijing, China
Yan-Fu Li, Department of Industrial Engineering, Tsinghua University, Beijing, China

ID 685   Personalized Product Recommendations on E-Commerce Websites with the use of Social Media
Pankaj Dutta, Shailesh J Mehta School of Management, Indian Institute of Technology Bombay, Mumbai, India
Hiren Rathod, Shailesh J Mehta School of Management, Indian Institute of Technology Bombay, Mumbai, India
Shanil Soni, Shailesh J Mehta School of Management, Indian Institute of Technology Bombay, Mumbai, India
Pratistha Chandra, Shailesh J Mehta School of Management, Indian Institute of Technology Bombay, Mumbai, India

ID 686   Data Mining in Healthcare Records: A Review Based on the Kind of Knowledge
Maria Sabastin S., Department of Management, Amrita Vishwa Vidyapeetham, Bengaluru, Karnataka, India
Akshay Anil Nair, Department of Management, Amrita Vishwa Vidyapeetham, Bengaluru, Karnataka, India
Rohit R., Department of Management, Amrita Vishwa Vidyapeetham, Bengaluru, Karnataka, India

ID 688   The Influence of Organizational Culture on Students' Satisfaction in Saudi Arabia
Saad Aziz Al-Otaibi, Azman Hashim International Business School, Universiti Teknologi Malaysia, Jalan Sultan Yahya Petra (Jalan Semarak), Kuala Lumpur, Malaysia.
Sha'ri Mohd Yusof, Razak Faculty of Technology and Informatics, Universiti Teknologi Malaysia, Jalan Sultan Yahya Petra (Jalan Semarak), Kuala Lumpur, Malaysia
Wan KhairuzamanWan Ismail, SulaimanalRajhi School of Business, SulaimanalRajhi Colleges, Alqassim, Kingdom of Saudi Arabia

ID 721   The Effect of Classroom Questioning on Oral English Output of Junior High School Students
Lu Juan, School of Education, Universiti Teknologi Malaysia; School of Foreign Studies, Shaanxi University of Technology, China
Noraffandy Bin Yahaya, School of Education, Universiti Teknologi Malaysia, Malaysia

ID 722   A Multi-Objective Generalized Intuitionistic Fuzzy Linear Fractional Inventory Model with Possibility and Necessity Constraints
Totan Garai, Assistant Professor, Department of Mathematics, Silda Chandra Sekhar College, West Bengal, India
Tapan Kumar Roy, Professor, Department Mathematics, Indian Institute of Engineering Science and Technology, Shibpur, West Bengal, India

ID 723   SMOSA Optimization Approach to a Multi Objective Model for a Machine Tool Selection and Operation Allocation Problem in FMS
Roozbeh Azizmohammadi, Department Of Industrial Engineering, Payame Noor University, Tehran,Iran
Abbas Mahmoudabadi, Department of Industrial Engineering, MehrAstan University, Guilan, Iran

ID 724   Modeling Analysis in Furniture Company by Using System Dynamics
Kevin Oktavian, Departement of Industrial Engineering, Universitas Tarumanagara, Grogol Petamburan, West Jakarta, Indonesia
Ahmad Ahmad, Departement of Industrial Engineering, Universitas Tarumanagara, Grogol Petamburan, West Jakarta, Indonesia
Lilyana Jap, Departement of Industrial Engineering, Universitas Tarumanagara, Grogol Petamburan, West Jakarta, Indonesia
Lina Gozali, Departement of Industrial Engineering, Universitas Tarumanagara, Grogol Petamburan, West Jakarta, Indonesia

ID 748   Quality Improvement in Refrigerator Division for 1-Door Refrigerator with Implementation of Six Sigma and Data Mining Method
Rina Fitriana, Quality Control Laboratory, Industrial Engineering Department, Trisakti University
Johnson Saragih, Quality Control Laboratory, Industrial Engineering Department, Trisakti University
Azizah Khairina Sarasetyo, Quality Control Laboratory, Industrial Engineering Department, Trisakti University

ID 753   Occupational Health and Safety Issues among Workers in Stone Industries in North Karnataka
M. Manzoor Hussain, Department of Mechanical Engineering, Jawaharlal Nehru Technological University, Hyderabad, INDIA
Katuru Phani Raja Kumar, Project Manager, Tech Mahindra Americas, USA.
Qutubuddin S.M., Industrial and Production Engineering Department, P.D.A.College of Engineering, Gulbarga, Karnataka State, INDIA
Hebbal S.S., Principal, P.D.A.College of Engineering, Gulbarga, Karnataka State, INDIA

ID 754   Optimization of Parameters for Sustainable Manufacturing Process – Special Focus on Machining Process
Abdullah Al-Ghielani , Sultan Qaboos University
Sujan Piya, Assistant Professor, Sultan Qaboos University

Ramanathan Arunachalam, Sultan Qaboos University
Bakhit Al-Mahri, Sultan Qaboos University
Abdullah Al-Ghielani, Sultan Qaboos University
Alwaleed Al-Jahwari, Sultan Qaboos University

ID 756   Stochastic Modeling of Rail Under-head Failure Risks
Sagheer Ranjha, Faculty of Science, Engineering and Technology, Swinburne University of Technology, Hawthorn, Australia
Ekambaram Palaneeswaran, Faculty of Science, Engineering and Technology, Swinburne University of Technology, Hawthorn, Australia

ID 757   Ergonomically Design E-Book to Improve Comprehension and Retention
Grace Lorraine D. Intal, School of Industrial Engineering and Engineering Management, Mapua University, Muralla St., Intramuros Manila
Janine Rose Talens School of Industrial Engineering and Engineering Management, Mapua University, Muralla St., Intramuros Manila

ID 758   Develop Tourism Demand Forecasting Model using Artificial Neural Network
Abdul Talib Bon, Faculty of Technology Management and Business Universiti Tun Hussein Onn Malaysia, Parit Raja, Batu Pahat 86400, Johor, Malaysia
Chan Seik Tieng, Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia, Parit Raja, Batu Pahat 86400, Johor, Malaysia

ID 759   A Machine Learning based Intelligent Agent for Human Resource Planning in IC Design Service Industry
Chieh Hsu, Department of Industrial Engineering and Engineering Management, National Tsing
Hua University, Hsinchu, Taiwan, Artificial Intelligence for Intelligent Manufacturing Systems
(AIMS) Research Center, Ministry of Science & Technology, Taiwan
Hsuan-An Kuo, Department of Industrial Engineering and Engineering Management, National Tsing, Hua University, Hsinchu, Taiwan, Artificial Intelligence for Intelligent Manufacturing Systems, (AIMS) Research Center, Ministry of Science & Technology, Taiwan
Ju-Chien Chien, Department of Industrial Engineering and Engineering Management, National Tsing, Hua University, Hsinchu, Taiwan, Artificial Intelligence for Intelligent Manufacturing Systems, (AIMS) Research Center, Ministry of Science & Technology, Taiwan
Wenhan Fu, Department of Industrial Engineering and Engineering Management, National Tsing, Hua University, Hsinchu, Taiwan, Artificial Intelligence for Intelligent Manufacturing Systems, (AIMS) Research Center, Ministry of Science & Technology, Taiwan
Kang-Ting Ma, Department of Industrial Engineering and Engineering Management, National Tsing, Hua University, Hsinchu, Taiwan, Artificial Intelligence for Intelligent Manufacturing Systems, (AIMS) Research Center, Ministry of Science & Technology, Taiwan
Chen-Fu Chien, Department of Industrial Engineering and Engineering Management, National
Tsing, Hua University, Hsinchu, Taiwan, Artificial Intelligence for Intelligent Manufacturing Systems, (AIMS) Research Center, Ministry of Science & Technology, Taiwan

ID 760   Models and Metaheuristics for the Pollution Traveling Salesman Problem
Paolo Toth, DEI, University of Bologna, Viale Risorgimento 2, Bologna, Italy
Valentina Cacchiani, DEI, University of Bologna, Viale Risorgimento 2, Bologna, Italy
Carlos Contreras-Bolton, DEI, University of Bologna, Viale Risorgimento 2, Bologna, Italy
John W. Escobar, Pontificia Universidad Javeriana, Cali, Colombia
Luis M. Escobar-Falcon, Technological University of Pereira, Pereira, Colombia
Rodrigo Linfati, University of Bio Bio, Av. Collao, Concepcion, Chile

ID 761   Entrepreneurial Competencies and Business Performance of Pontian Small Medium Enterprises
Avlyin Jay Sumayong, Department of Technology Management, Faculty of Technology
Management and Business, University Tun Hussein Onn Malaysia
Ng Kim Soon, Department of Technology Management, Faculty of Technology
Management and Business, University Tun Hussein Onn Malaysia
Muhammad Raushan Bin Azhar, Department of Technology Management, Faculty of Technology Management and Business, University Tun Hussein Onn Malaysia
Agnes Sumayung, Department of Technology Management, Faculty of Technology
Management and Business, University Tun Hussein Onn Malaysia

ID 762   Understanding the Antecedents of Social Media Fatigue
Shih-Chih Chen, Department of Information Management, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan, Republic of China

ID 763   Current Health Disease among Solid Waste Management Workers: A Case Study in Malaysia
Ivy Deirdre Mangkau, Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Malaysia

Dr. Seow Ta Wee, Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Malaysia

Federick Noel Mangkau, Faculty of Science and Natural Resources, Universiti Malaysia Sabah, Sabah, Malaysia

ID 764   Design and Development of a Decision Support System with Visual Analytics to Improve MRT Maintenance Operations

Grace Lorraine D. Intal, School of Information Technology, Mapua University, Muralla St., Intramuros Manila

Thea Marielle C. Gomez, School of Information Technology, Mapua University, Muralla St., Intramuros Manila

Alison Vince T. Cadorniga, School of Information Technology, Mapua University, Muralla St., Intramuros Manila

Jeongwong Kang, School of Information Technology, Mapua University, Muralla St., Intramuros Manila

ID 765   Pilot Study: Organizational Creativity in Indonesia's Creative Industries

Retno Indriartiningtias, Doctoral Student Doctoral in Mechanical and Industrial Engineering Department, Gadjah Mada University, Yogyakarta, Indonesia, Industrial Engineering

Department, Trunojoyo University, Bangkalan, East Java, Indonesia

Budi Hartono, Subagyo, Mechanical and Industrial Engineering Department, Gadjah Mada University, Yogyakarta, Indonesia

ID 766   Reasoning Types in Industrial Engineering/Operations Management Processes

Muhittin Oral, Graduate School of Business, Ozyegin University, Istanbul, Turkey

Ossama Kettani, Modellium Inc., Centre Ville, Québec City, Canada

ID 767   Information Security for Hospital Information System Using COBIT 5 Framework

Khilda Nistrina, Faculty of Technology Management and Business, University Tun Hussein Onn Malaysia, Johor

Prof. Dr. H. Abdul Talib Bin Bon, Faculty of Technology Management and Business, University Tun Hussein Onn Malaysia, Johor

ID 769   A Conceptual Framework on the Role of Road Safety Management Intervention in Overcoming Road Accident

Siti Hawa Harith, Faculty of Social Science and Humanities, Universiti Teknologi Malaysia, Johor, Malaysia, School of Business Management, Universiti Utara Malaysia, Kedah, Malaysia

Norashikin Mahmud, Faculty of Social Science and Humanities, Universiti Teknologi Malaysia, Johor, Malaysia

Mehran Doulatabadi, Graduate School of Business Administration, Meiji University, Tokyo, Japan

ID 770   Review of the Implementation Status & Associated Challenges for Industry 4.0 Transformation in Asian MSMEs

Sanjiv Narula, Research Scholar, BML Munjal University

Vishal Talwar, BML Munjal university

Maheshwar Talwar, BML Munjal university

Surya Prakash, BML Munjal university

Saravjit singh, BML Munjal university

ID 771   Measuring Utrecht Work Engagement Scale: Factor Analysis Approach in Telecommunication Sector

Abdul Talib Bon, Faculty of Technology Management, Business and Entrepreneurship,
University Tun Hussein Onn Malaysia, Parit Raja, Malaysia

Abdirahman Mohamud Shire, Faculty of Technology Management, Business and Entrepreneurship, University Tun Hussein Onn Malaysia, Parit Raja, Malaysia

ID 772   Increasing Productivity and Efficiency for Third Party Logistics Service

Josephine D. German, School of Industrial Engineering and Engineering Management, Mapúa University, Intramuros, Manila, Philippines

Maria Katrina T. Asuncion, School of Industrial Engineering and Engineering Management, Mapúa University, Intramuros, Manila, Philippines

Louie E. Pacheco, School of Industrial Engineering and Engineering Management, Mapúa University, Intramuros, Manila, Philippines

ID 774: Problem Based Learning for Techno-economic Analysis for Logistics System Course: Case in a State-owned Warehouse

Muhammad Hisjam, Department of Industrial Engineering, Faculty of Engineering, Universitas Sebelas Maret, Surakarta, Indonesia

ID 775   Preparation of Polyacrylamide Grafted onto Magnetic Cellulose as Flocculant in Wastewater Pre-treatment Application

Mohd Hizam, School of Chemical and Energy Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, Johor, Malaysia

Norzita Ngadi, School of Chemical and Energy Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, Johor, Malaysia

ID 776   Environmental Factor and Road Accident: A Review Paper

Siti Hawa Harith, Faculty of Social Science and Humanities, Universiti Teknologi Malaysia, Johor, Malaysia, School of Business Management, Universiti Utara Malaysia, Kedah, Malaysia

Norashikin Mahmud, Faculty of Social Science and Humanities, Universiti Teknologi Malaysia
Johor, Malaysia

Mehran Doulatabadi, Graduate School of Business Administration, Meiji University, Tokyo, Japan

ID 777   Learning 4.0: Connecting the Dots, Reaching the Unbleached by ICT Adoption in Education

Meenakshi Narula, Educator and Co-coordinator , Blue Bellls model school
Sanjiv Narula, Research Scholar, BML Munjal University
Sudhanshu Padhey, Hero
Soumen Bhattacharya

ID 778   Surfactant and Polymer-Nanoparticle Interaction with Heavy Crude Oil

Rahul Saha, Department of Chemical Engineering, Indian Institute of Technology Guwahati,
India
Ramgopal Uppaluri, Department of Chemical Engineering, Indian Institute of Technology, Guwahati,India
Pankaj Tiwari, Department of Chemical Engineering, Indian Institute of Technology Guwahati,
India

ID 779   The Capacitated Multiple-Allocation Hub Location Problem Model for Railway Logistics Transportation

Virda Hersy Lutviana Saputri, Master Program of Industrial Engineering, Faculty of Engineering, Universitas Sebelas Maret, Surakarta, Indonesia
Wahyudi Sutopo, Department of Industrial Engineering, Faculty of Engineering, Universitas Sebelas Maret, Surakarta, Indonesia
Yuniaristanto, Department of Industrial Engineering, Faculty of Engineering, Universitas Sebelas Maret, Surakarta, Indonesia
Muhammad Hisjam, Department of Industrial Engineering, Faculty of Engineering, Universitas Sebelas Maret, Surakarta, Indonesia

ID 780   The Project Based Learning Combined with Problem Solving Based Learning in Industrial Engineering Programs

Eldon Caldwell, Dean of Industrial Engineering Department, University of Costa Rica

ID 781   Effect of Emotional Intelligence on Employee Work-Engagement and Career Satisfaction Using Thriving As a Mediator and Power Distance as a Moderator

Abroo Murtaza, Foundation University Rawalpindi Campus, Pakistan

ID 782   Enhancing Firm Performance through Human Resource Management (HRM) Practices and HR Roles

Ivana voo, UTM
Khairiah Soehod, Universiti Teknologi Malaysia
Choi Sang Long, Raffles University Iskandar
Mehran Doulatabadi, Visiting Senior Research Fellow, Meiji University

ID 783   Impact of Exploitative Leadership on Employee Outcomes and Moderating Role of Narcissism

Irfan Sakhawat, Riphah International University Islamabad
Asma Gul, Riphah International University Islamabad
Abroo Murtaza, Riphah International University Islamabad

ID 784   Development of Framework for the Core Soft Skills and Competencies Required by Project Managers in Oil and Gas Industry

Esra Abusharkh, Sultan Qaboos University
Asila Al-Shamli, Sultan Qaboos University
Nasr Al Hinai, Sultan Qaboos University
Emad Summad, Assistant Professor, Sultan Qaboos University

ID 785   Individual Characteristics Influencing Employee Innovative Behavior with Reward as Moderator in Universiti Teknologi Malaysia

Ivana voo, UTM
Khairiah Soehod, Universiti Teknologi Malaysia
Hapriza Ashari, Universiti Teknologi Malaysia
Ebi Shahrin Suleiman, Universiti Teknologi Malaysia
Norzaidahwati Zaidin, Universiti Teknologi Malaysia
Roshaslizawati Mohd Noor, Universiti Teknologi Malaysia
Mehran Doulatabadi, Visiting Senior Research Fellow, Meiji University

ID 786   Design of an Automated Millet Milling Machine

Kudzaishe L Mudzingwa, University of Zimbabwe, Department of Mechanical Engineering, Mount Pleasant Harare, Zimbabwe
Tawanda Mushiri, University of Zimbabwe, Department of Mechanical Engineering, Mount Pleasant Harare, Zimbabwe

ID 787   Expanding Central Craft Company

Dalal Al-Beshaier, Industrial Engineering Department, College of Engineering and Technology, American University of the Middle East, Kuwait
Nour Al Enezi, , Industrial Engineering Department, College of Engineering and Technology, American University of the Middle East, Kuwait

Noor Khourshed, , Industrial Engineering Department, College of Engineering and Technology, American University of the Middle East, Kuwait

Rawan Al-Elaj, , Industrial Engineering Department, College of Engineering and Technology, American University of the Middle East, Kuwait

Sherifa Al-Kandari, , Industrial Engineering Department, College of Engineering and Technology, American University of the Middle East, Kuwait

Mustafa Sendil, , Industrial Engineering Department, College of Engineering and Technology, American University of the Middle East, Kuwait

ID 788   Thermodynamic Modeling of Vapor Absorption Refrigeration Cycle-An Overview

Uhamir Patrick, Engineer, The Benazir Bhutto Shaheed University Of Technology And Skill Development, Khairpur Mirs, Sindh, Pakistan

Hussain Bux Marri, Dean Of Faculty, Bsc Engineering Technology, The Benazir Bhutto Shaheed University Of Technology And Skill Development, Khairpur Mirs, Sindh, Pakistan

ID 789   Study of Wood Dust and Chemical Hazard at Wood Based Furniture

Anis Amira Mat Zuki, School of Mechanical Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, Skudai, Johor Bahru

Jafri Mohd Rohani, School of Mechanical Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, Skudai, Johor Bahru

Khidzir Zakaria, School of Mechanical Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, Skudai, Johor Bahru

Hafsam Maghpor, National Institute of Occupational Saafety and Health, Senai, Johor Bahru

Ismail Abdul Rahman, National Institute of Occupational Saafety and Health, Senai, Johor Bahru

Norul Azreen Azis, National Institute of Occupational Saafety and Health, Senai, Johor Bahru

ID 790   Study of Ergonomics and Noise Hazard at Wood Based Furniture Industry

Anis Amira Mat Zuki, School of Mechanical Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, Skudai, Johor Bahru

Jafri Mohd Rohani, School of Mechanical Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, Skudai, Johor Bahru

Khidzir Zakaria, School of Mechanical Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, Skudai, Johor Bahru

Hafsam Maghpor, National Institute of Occupational Saafety and Health, 81400, Senai, Johor Bahru

Ismail Abdul Rahman, National Institute of Occupational Saafety and Health, 81400, Senai, Johor Bahru

Norul Azreen Azis, National Institute of Occupational Saafety and Health, 81400, Senai, Johor Bahru

ID 791   Categorization of Shopping Centres in Malaysia: A Criteria-Based Delphi Study

Ihfasuziella Ibrahim, Construction Research Institute of Malaysia (CREAM)

Talib Bon

Abdul Hadi Nawawi, Faculty of Architecture, Planning and Surveying, UiTM

Edie Ezwan Mohd Safian, Faculty Technology and Business, UTHM

ID 792   The Role of Railway Industry in Indonesia's Economic Growth

Hermanto Dwiatmoko, Faculty of Engineering, University of Mercu Buana, Jakarta, Indonesia

ID 795   Development of an Automated Railway Level Crossing Gate Control System using PLC

Rumana Tasnim, World University of Bangladesh, Bangladesh

Abu Salman Shaikat, World University of Bangladesh, Bangladesh

Kamruzzaman Sarkar, World University of Bangladesh, Bangladesh

Ismail Mahmud, World University of Bangladesh, Bangladesh

Mohammad Ali, World University of Bangladesh, Bangladesh

Tarikul Islam, World University of Bangladesh, Bangladesh

ID 800   Estimating people stature based on Hand Length and Width: a case of Omani people

Awadh Al Shehemi, Department of Mechanical and Industrial Engineering, Sultan Qaboos University, Oman

Mohammad Khadem, Department of Mechanical and Industrial Engineering, Sultan Qaboos University, Oman

Sujan Piya, Assistant Professor, Department of Mechanical and Industrial Engineering, Sultan Qaboos University, Oman

ID 801   Application of Multi-Criteria Decision Making (MCDM) Tools in Governance Evaluation of Accessible and Inclusive Urban Developments (AIUD)

Amal AlKhamis, PhD in Engineering Management Program, University of Sharjah, Sharjah, UAE

Fikri Dweiri, Department of Industrial Engineering and Engineering Management, University of Sharjah, Sharjah, UAE

Hasim Altan, Department of Architectural Engineering, University of Sharjah, Sharjah, UAE

ID 802   Contemporary Modular Study Table for Small Minimalist Residence in Malaysia

Mohamad Ali Selimin, Universiti Tun Hussein Onn Malaysia, Malaysia

Safari Hasanuddin, Universiti Tun Hussein Onn Malaysia, Malaysia

Juliana Abdul Halip, University Tun Hussein Onn Malaysia (Uthm), Malaysia

Abdullah Al Rashid Ab Hamid, University Tun Hussein Onn Malaysia (Uthm), Malaysia

Abdul Talib Bon, Null, Universiti Tun Hussein Onn Malaysia, Malaysia

ID 803   Calculation of Safety Stock and Bottleneck Minimization with Theory of Constraints Method Approach on Sand Coated Metal Roof Production in XYZ Ltd.

Jason Nathanael Chandra, Department of Industrial Engineering, Tarumanagara University, Jakarta, Indonesia
Lina Gozali, Department of Industrial Engineering, Tarumanagara University, Jakarta, Indonesia
Lilyana Jap, Department of Industrial Engineering, Tarumanagara University, Jakarta, Indonesia

ID 807   Handling Heavy Metal Waste through Utilization of Lapindo Activated Mud HCl to Realize Environmentally Friendly Industries

Sigit Trimayanto, Department of Chemistry, State University of Surabaya, Surabaya, Indonesia
Sari Edi Cahyaningrum, Department of Chemistry, State University of Surabaya, Surabaya, Indonesia

ID 812   Supply China Finance with Applications of Block Chain

Kin Keung Lai, International Business School, Shaanxi Normal University, Xian, China

ID 813   Factors Affecting Efficiency of Police Stations in Metropolitan Police Division 3

Pornpimol Chaiwuttisak, Statistics Department, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand

ID 814   Achieving Performance Excellence through "TRADE" Best Practice Benchmarking Methodology: The Dubai Government Experience

Mehran Doulatabadi , Visiting Senior Research Fellow , Meiji University

ID 815   Developing Students Graduate Attributes in Service Learning Project through Online Platform

Azizah Yusof, Faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia, Johor Bahru, Johor, Malaysia
Noor Azean Atan, Faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia, Johor Bahru, Johor, Malaysia
Jamalludin Harun, Faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia, Johor Bahru, Johor, Malaysia
Mehran Doulatabadi, Graduate School of Business Administration, Meiji University, Tokyo,
Japan

ID 818   Life Cycle Assessment in Ceramic Floor Tile Industry in Sri Lanka

S. Kamalakkannan, Department of Manufacturing & Industrial Engineering, Faculty of Engineering, University of Peradeniya
R.L. Peiris, Department of Manufacturing & Industrial Engineering, Faculty of Engineering, University of Peradeniya
A.K. Kulatunga, Department of Manufacturing & Industrial Engineering, Faculty of Engineering, University of Peradeniya

ID 819   Understanding Outsourcing from Client's Perspective: Revisiting the Existing Literature

Damitha Rajini, Faculty of Graduate Studies, University of Colombo, Sri Lanka
K.A.S.P. Kaluarachchi, Department of Management and Organisation Studies, University of Colombo, Sri Lanka

ID 820: Learning a Supply Chain Management Course by Problem Based Learning: Case Studies in the Newspaper Industry

Wahyudi Sutopo, Research Group of Industrial Engineering and Techno-economics, Department of Industrial Engineering, Universitas Sebelas Maret, Surakarta, Indonesia
Era Febriana Aqidawati, Laboratory of Logistics and Business System, Department of Industrial Engineering, Universitas Sebelas Maret, Surakarta, Indonesia

ID 821   Predicting Online Search Intention for Validating Product Halalness Status

Ida Giyanti, Industrial Engineering Study Program, Universitas Setia Budi, Surakarta, Indonesia
Erni Suparti, Industrial Engineering Study Program, Universitas Setia Budi, Surakarta, Indonesia
Wahyudi Sutopo, Research Group of Industrial Engineering and Techno-economics, Department of Industrial Engineering, Universitas Sebelas Maret, Surakarta, Indonesia

ID 822   Framework System of University Technology Based Start-Up Development by University Incubator: Case Study

Wahyudi Sutopo, Research Group of Industrial Engineering and Techno Economy, Industrial Engineering Department, Sebelas Maret University, Indonesia, Surakarta, Indonesia
Yuniaristanto, Laboratory of Logistic and Business System, Industrial Engineering Department, Sebelas Maret University, Indonesia, Surakarta, Indonesia
Danis Eka Prasetya Wicaksana, Laboratory of Logistic and Business System, Agency for Assessment and Application Technology, BPPT, Technology Policy Assessment, Indonesia
Anugerah Widiyanto, Research Group of Industrial Engineering and Techno Economy, Agency for Assessment and Application Technology, BPPT, Technology Policy Assessment, Indonesia

ID 823   Technical Feasibility Battery Lithium to Support Unmanned Aerial Vehicle (UAV): A Technical Review

Nida An Khofiyah, Department of Industrial Engineering, Universitas Sebelas Maret, Surakarta, Indonesia

Wahyudi Sutopo, Research Group of Industrial Engineering and Techno-economics, Universitas Sebelas Maret, Surakarta, Indonesia

Bayu Dwi Apri Nugroho, Department of Agricultural and Biosystems Engineering, Faculty of Agricultural Engineering, Universitas Gadjah Mada, Yogyakarta, Indonesia

ID 824   Influence of Work Safety and Work Stress on Productivity
Daswir Lelo, PhD Candidate, Universiti Teknologi Malaysia

Sha'ri Mohd. Yusof, Razak School Engineering and Advanced Technology, Universiti Teknologi Malaysia

Jan Horas V. Purba, Sekolah Tinggi Ilmu Ekonomi Kesatuan, Bogor, Indonesia

ID 825   Internal vs External Green Supply Chain Management at Petrochemical Industry Economic Performance in Indonesia
Yuary Farradia, Faculty of Technology and Management, Universiti Tun Hussein Onn, Batupahat, Johor , Malaysia

Abdul Talib Bin Bon, Faculty of Technology and Management, Universiti Tun Hussein Onn, Batupahat, Johor , Malaysia

Hari Muharam, Faculty of Economics, Pakuan University, Bogor, Indonesia

ID 826   Environment Sustainability in Petrochemical Industry in Indonesia
Yuary Farradia, Faculty of Technology and Management, Universiti Tun Hussein Onn, Batupahat, Johor , Malaysia

Abdul Talib Bin Bon, Faculty of Technology and Management, Universiti Tun Hussein Onn, Batupahat, Johor , Malaysia.

ID 827   Green Marketing Mix Role Toward Sustainability Performance of Petrochemical Industry in Indonesia
Yuary Farradia, Faculty of Technology and Management, Universiti Tun Hussein Onn, Batupahat, Johor , Malaysia

Abdul Talib Bin Bon, Faculty of Technology and Management, Universiti Tun Hussein Onn, Batupahat, Johor , Malaysia

ID 828   User-Entity Behavior Analytics (UEBA) – A Systematic Review of Literatures
Revanth Filbert Raj I, Department of Management, Amrita Vishwa Vidyapeetham University
Bangalore, India

Shekar Babu PhD, Department of Management, Amrita Vishwa Vidyapeetham University
Bangalore, India

ID 829   CSR and Social Media Analytics in India
Arya Sree, Department of Management, Amrita Vishwa Vidyapeetham University, Bangalore, India

Shekar Babu PhD Department of Management, Amrita Vishwa Vidyapeetham University, Bangalore, India

ID 830   Vulnerability Management (VM) Analytics – A Systematic Review of Literatures
Rahul C. N, Department of Management, Amrita Vishwa Vidyapeetham University Bangalore, India

Shekar Babu PhD, Department of Management, Amrita Vishwa Vidyapeetham University
Bangalore, India

ID 831   Healthcare Social Factors of Companies in India
Amritha M Nair, Department of Management, Amrita Vishwa Vidyapeetham University
Bangalore, India

Shekar Babu PhD, Department of Management, Amrita Vishwa Vidyapeetham University Bangalore, India

ID 832   Social Disclosures using Social Media in India
Abiram Guruswamy, Department of Management, Amrita Vishwa Vidyapeetham University Bangalore, India

Shekar Babu PhD, Department of Management, Amrita Vishwa Vidyapeetham University Bangalore, India

ID 833   An Analysis of Indian Companies on Whistle Blowing
M. Raghuraman, Department of Management, Amrita Vishwa Vidyapeetham University Bangalore, India

Shekar Babu PhD, Department of Management, Amrita Vishwa Vidyapeetham University Bangalore, India

ID 834   Willful Default or Socially Responsible – A Study of Indian Banks and Companies
M. Sathish Kumar, Department of Management, Amrita Vishwa Vidyapeetham University Bangalore, India

Prabhavathi.K., School of Humanities and Management, National Institute of Technology, Tadepalligudam, West Godavari, Andhra Pradesh, India

Shekar Babu PhD, Department of Management, Amrita Vishwa Vidyapeetham University Bangalore, India

ID 835   Comparison of Mandated CSR Performance Models across Various Industries in India
Kavya Suresh, Department of Management, Amrita Vishwa Vidyapeetham University Bangalore, India

Shekar Babu PhD, Department of Management, Amrita Vishwa Vidyapeetham University Bangalore, India

ID 836   Develop a Decision Support System (DSS) for Social Activities by Companies in India

Shushant Pal, Department of Management, Amrita Vishwa Vidyapeetham University Bangalore, India
Shekar Babu PhD, Department of Management, Amrita Vishwa Vidyapeetham University Bangalore, India

ID 837   Research on Application of Computer Aided Translation Technology to Translation Teaching

Lu Juan, School of Education, Universiti Teknologi Malaysia; School of Foreign Studies, Shaanxi University of Technology, China
Noraffandy Bin Yahaya, School of Education, Universiti Teknologi Malaysia, Malaysia

ID 838   A Study on Awareness of Block Chain Technology among Human Resources Executives in India

Vinith Kumar Nair, Marketing & Associate Dean, TKM Institute of Management, Kerala, India
Maria Sabastin S., Department of Management, Amrita Vishwa Vidyapeetham, Bengaluru, Karnataka, India

ID 839   Knowledge, Attitude and Practices of OSHCIM Implementation Readiness from the Perspective of Clients, Designers and Contractors

Jafri Mohd Rohani, Faculty of Engineering, Universiti Teknologi Malaysia, Skudai, Johor Bahru
Kamarizan Kidam, Faculty of Engineering, Universiti Teknologi Malaysia, Skudai, Johor Bahru
Mohammad Ismail, Faculty of Engineering, Universiti Teknologi Malaysia, Skudai, Johor Bahru
Hamidah Kamarden, Faculty of Engineering, Universiti Teknologi Malaysia, Skudai, Johor Bahru
Siti Suhaili Suhaili Shalan, Faculty of Engineering, Universiti Teknologi Malaysia, Skudai, Johor Bahru
Anis Amira Mat Zuki, Faculty of Engineering, Universiti Teknologi Malaysia, Skudai, Johor Bahru
Augeny Satik anak Ayak, Faculty of Engineering, Universiti Teknologi Malaysia, Skudai, Johor Bahru
Raja Nor Atikah Raja Azam Shah, Faculty of Engineering, Universiti Teknologi Malaysia, Skudai, Johor Bahru
Kherun Nita Ali, Faculty of Built Environment, Universiti Teknologi Malaysia, Skudai, Johor Bahru
Hamizah Liyana Tajul Ariffin, Faculty of Built Environment, Universiti Teknologi Malaysia, Skudai, Johor Bahru
Norhazren Izatie Mohd, Faculty of Built Environment, Universiti Teknologi Malaysia, Skudai, Johor Bahru
Nur Emma Mustaffa, Faculty of Built Environment, Universiti Teknologi Malaysia, Skudai, Johor Bahru
Samsiah Abdullah, Faculty of Built Environment, Universiti Teknologi Malaysia, Skudai, Johor Bahru

ID 841 Analysis of Course Content Development using Pedagogic Framework – A Case Study

Manoj Kumar Soni and Tamali Bhattacharyya, Birla Institute of Technology and Science, Pilani, Rajasthan, India
Bani Bhattacharya, Indian Institute of Technology, Kharagpur, Khargpur, India

ID 842 Sorghum-Based Alternative Food Industry: Entrepreneurship High Education

Endang Noerhartati, Department of Agroindustrial Technology, Universitas Wijaya Kusuma Surabaya, Indonesia, Jl. Dukuh Kupang XXV/54 Surabaya, Indonesia, Postgraduate Student, Department of Education Management, Unesa, Surabaya, Indonesia, Jl. Kampus Ketintang, Surabaya, Indonesia
Lusy Tunik Muharlisiani, Department of English Education, Universitas Wijaya Kusuma, Surabaya, Indonesia, Postgraduate Student, Department of Education Management, Unesa, Surabaya, Indonesia
Dewie Tri Wijayati, Yatim Riyanto, Toho Cholik Mutohir, Professor, Department of Education Management, Uneversitas Negeri Surabaya, Indonesia
Soedjarwo, Warih Handayaningrum, Moedjito, Lecture, Department of Education Management, Uneversitas Negeri Surabaya, Indonesia
Abdul Talib Bin Bon, Fakulti Pengurusan Teknologi dan Perniagaan Universiti Tun Hussein Onn Malaysia (UTHM) Johor, Malaysia

ID 843 Design and Development of Game Based Evaluation and Learning (GABEL) for Applied Thermodynamics course for Active Learning

Manoj Kumar Soni and Tamali Bhattacharya, Birla Institute of Technology and Science (BITS), Pilani, India

ID 845 Women's Leadership Policy Strategy: Improving Quality of Education (TQM) In Higher Education

Lusy Tunik Muharlisiani, Department of English Education, Universitas Wijaya Kusuma, Surabaya, Indonesia, Postgraduate Student, Department of Education Management, Unesa, Surabaya, Indonesia
Endang Noerhartati, Department of Agroindustrial Technology, Universitas Wijaya Kusuma Surabaya, Indonesia, Postgraduate Student, Department of Education Management, Unesa, Surabaya, Indonesia
Dewie Tri Wijayati, Yatim Riyanto, Toho Cholik Mutohir, Professor, Department of Education Management, Universitas Negeri Surabaya, Indonesia
Soedjarwo, Warih Handayaningrum, Moedjito, Lecture, Department of Education Management, Uneversitas Negeri Surabaya, Indonesia
Siti Bariroh – Universitas Gresik, Indonesia
Abdul Talib Bin Bon, Fakulti Pengurusan Teknologi dan Perniagaan Universiti Tun Hussein Onn Malaysia (UTHM) Johor, Malaysia

ID 846   DMAIC Approach to Improve on Safety Performance Using Safety Management System in Kuwait International Airport

Suat Kasap, Alaa Al-Shammari, Nadine Awadah, Zahra'a Kamal, and Sahar Redha, Industrial Engineering Department, College of Engineering and

Technology, American University of the Middle East, Kuwait

ID 855 Control Returnability Inventory Using System Dynamic Modeling and Fuzzy Logic

Muhammad Talha*1, Syed Ahmad Helmi*1,2, Azanizawati Ma'aram*1 and Muhammad Hisjam*3
1Faculty of Mechanical Engineering, Universiti Teknologi Malaysia, 81310 Johor, Malaysia
2Center for Engineering Education, Universiti Teknologi Malaysia, 81200 Skudai, Johor Bahru
3Department of Industrial Engineering, Faculty of Engineering, Sebelas Maret University, Surakarta, Indonesia

Autocorrelated Multivariate Control Chart in Cooking Oil Industry

Ivan Pudjihardjo, Ig. Jaka Mulyana, Luh Juni Asrini
Industrial Engineering Department
Widya Mandala Surabaya Catholic University
Jl. Kalijudan 37 Surabaya Indonesia
ivanpudjihardjo@gmail.com, jmulyono@ukwms.ac.id, juniasrini@ukwms.ac.id

ABSTRACT

In this article will be discussed about the implementation of control chart in cooking oil industry. Cooking oil has some parameters of quality i.e. Free Fatty Acid (FFA), Peroxide Value (PV), Iodine Value (IV), color (Red and Yellow), Moisture Content, Cloud Point (CP), Cloud Stability (CS) and Freezing Point. The observed data of cooking oil quality parameters shows that the data is autocorrelated. Therefore, residual mapping based on forecasting results from the time series model is used to construct autocorrelated multivariate control chart. In the multivariate T^2 Hotelling control chart of the residual VAR model (2) for chemical factor has a upper control limit (UCL) value of 22.18 and a median of 3.60. The T^2 Hotelling control chart of the residual VAR model (2) for physical factors has a control upper control limit (UCL) of 21.59 and a median value of 3.63.

Keywords
quality control, multivariate control chart, autocorrelated.

1. Introduction

Quality becomes the main factor of consumer decisions to get a product, consumers tend to buy a product from a company which is considered more qualified than its competitors. There are several ways to improve product quality, one of them is to apply statistical process control (SPC). Shewhart (1931) developed statistical process control (SPC) techniques for the improvement and assurance of product and service quality. Statistical process control (SPC) is a methodology used for monitoring and reducing the variation in manufacturing processes and the main tools of SPC are control charts. Normally, SPC works under the assumption that observed data is independent. However, the advanced measurement technology, shortened sampling interval and the nature of processes, especially in continuous processes, e.g., chemical processes, the independence of each observation has been violated in many scenarios. The lack of independence among each sample usually comes in the form of serial autocorrelation (Kandananond, 2014). There are many situations in which the simultaneous monitoring or control of two or more related quality characteristics is necessary. Lu and Reynolds (1999) and Jarrett and Pan, (2007) studied quality control chart for monitoring multivariate autocorrelated control chart. Monitoring two or more quality characteristics independently can be very misleading. Process-monitoring problems in which several related variables are of interest are sometimes called multivariate quality-control (or process-monitoring) problems. The original work in multivariate quality control was done by Hotelling (1947) (Montgomery, 2009).

Cooking oil has some parameters of quality i.e. Free Fatty Acid (FFA), Peroxide Value (PV), Iodine Value (IV), color (Red and Yellow), Moisture Content, Cloud Point (CP), Cloud Stability (CS) and Freezing Pointt. Free Fatty Acid (FFA) is a parameter to determine free fatty acid content in a sample. In FFA analysis, Phenolphthalein (PP) indicator is used. FFA value in pure CPO is below 3%. Peroxide Value (PV) is a parameter to know the oxidation rate of oil. PV is calculated as millilitre of Sodium Tiosulfate which is used to bind free Iodine in every gram of oil. The greater the PV, the more oxidation occurs in the oil. The size of the PV will affect the quality of oil. Iodine Value (IV) is a parameter for measuring clarity in cooking oil. Cooking oil clarity is indicated by the number of double bonds contained. Color is a visual analysis used to measure the color of fats and oils using the Lovibond Tintometer. Cloud Point (CP) is a parameter used to find out the temperature when the oil is cloudy or obfuscated.

2. T^2 Hotelling Control Chart

In 1947, Harold Hotelling introduced a control chart that could map a multivariate observation known as the T^2 Hotelling control chart. The calculation of T2 Hotelling's control chart for data with individual observations can be done using equation 2.1.

$$T^2 = (x - \bar{x})'S^{-1}(x - \bar{x}) \tag{2.1}$$

Where S^{-1} is the inverse of the covariant variant matrix and x is the average vector. Calculation of variance and covariance matrix can be done by using equation 2.2.

$$S = \frac{1}{2}\frac{V'V}{(m-1)} \tag{2.2}$$

Where m is the amount of data and V can be calculated using equation 2.3.

$$V_i = x_{i+1} - x_i \quad i = 1,2,\dots,m-1 \tag{2.3}$$

Calculations for upper control limits (UCL) can be performed using equation 2.4 and lower control limits (LCL) using equation 2.5.

$$UCL = \frac{(m-1)^2}{m}\beta_{\alpha,\frac{p}{2},\frac{(m-p-1)}{2}} \tag{2.4}$$

$$LCL = 0 \tag{2.5}$$

3. Model *Vector Autoregressive*

The VAR model is a quantitative forecasting approach that is usually applied to multivariate time series data. This model explains the interrelationships between observations on particular variables at a time with observations on the variables themselves at previous times and also their association with observations on other variables at earlier times (Wei, 2006). The general form of VAR is : (Hamilton, 1994)

$$y_t = c + \emptyset_1 y_{t-1} + \emptyset_2 y_{t-2} + \dots + \emptyset_p y_{t-p} + e_t$$

$$y_t = c + \emptyset(B)y_t + e_t \tag{2.6}$$

Where
$y_t = (y_{1,t}, y_{2,t}, \dots, y_{m,t})'$ is a variable vector of y sized $(m\times1)$
$c = (c_1, c_2, \dots, c_m)'$ is a constant vector of size $(m\times1)$
$e_t = (e_{1,t}, e_{2,t}, \dots, e_{m,t})'$ is a error vector of size $(m\times1)$
$\emptyset$ = coefficient of var model, matrix $(m\times m)$
$t = 1,2,\dots,n$
$B = backshift\ operator$
m = number of variables
p = order VAR
assumed $e_t \sim$ IIDN $(0,\Omega)$ dan $E(e_t e_t) = \Omega$.

The VAR model in equation (2.9) if translated to four variables and autoregressive order p becomes

$$\begin{bmatrix} y_{1,t} \\ y_{2,t} \\ y_{3,t} \\ y_{4,t} \end{bmatrix} = \begin{bmatrix} c_1 \\ c_2 \\ c_3 \\ c_4 \end{bmatrix} + \begin{bmatrix} \emptyset_{1.11} & \emptyset_{1.12} & \emptyset_{1.13} & \emptyset_{1.14} \\ \emptyset_{1.21} & \emptyset_{1.22} & \emptyset_{1.23} & \emptyset_{1.24} \\ \emptyset_{1.31} & \emptyset_{1.32} & \emptyset_{1.33} & \emptyset_{1.34} \\ \emptyset_{1.41} & \emptyset_{1.42} & \emptyset_{1.43} & \emptyset_{1.44} \end{bmatrix}\begin{bmatrix} y_{1,t-1} \\ y_{2,t-1} \\ y_{3,t-1} \\ y_{4,t-1} \end{bmatrix} + \begin{bmatrix} \emptyset_{2.11} & \emptyset_{2.12} & \emptyset_{2.13} & \emptyset_{2.14} \\ \emptyset_{2.21} & \emptyset_{2.22} & \emptyset_{2.23} & \emptyset_{2.24} \\ \emptyset_{2.31} & \emptyset_{2.32} & \emptyset_{2.33} & \emptyset_{2.34} \\ \emptyset_{2.41} & \emptyset_{2.42} & \emptyset_{2.43} & \emptyset_{2.44} \end{bmatrix}\begin{bmatrix} y_{1,t-2} \\ y_{2,t-2} \\ y_{3,t-2} \\ y_{4,t-2} \end{bmatrix} + \dots$$

$$+ \begin{bmatrix} \emptyset_{p.11} & \emptyset_{p.12} & \emptyset_{p.13} & \emptyset_{p.14} \\ \emptyset_{p.21} & \emptyset_{p.22} & \emptyset_{p.23} & \emptyset_{p.24} \\ \emptyset_{p.31} & \emptyset_{p.32} & \emptyset_{p.33} & \emptyset_{p.34} \\ \emptyset_{p.41} & \emptyset_{p.42} & \emptyset_{1.43} & \emptyset_{p.44} \end{bmatrix}\begin{bmatrix} y_{1,t-p} \\ y_{2,t-p} \\ y_{3,t-p} \\ y_{4,t-p} \end{bmatrix} + \begin{bmatrix} e_{1,t} \\ e_{2,t} \\ e_{3,t} \\ e_{4,t} \end{bmatrix}$$

4. Identification Model VAR

In principle, the identification of the time series multivariate model is almost identical to the univariate model of time series. The identification of the VAR model is based on the pattern or structure of the sample correlation matrix (MACF) matrix and the partial sample correlation function matrix (MPACF) after a precise transformation has been performed to stabilize the variant, or differencing to stabilize the mean. There is another way to determine the corresponding VAR order, in addition to looking at the MPACF pattern also consider the value of Akakike Information Criterion (AIC). A model is said to be better if its AICp value is the minimum. The equation to calculate AICp or AIC value on VAR (p) is

$$AIC_p = \ln\left(\left|\left|\hat{\Omega}_p\right|\right|\right) + \frac{2pm^2}{(n-p)} \tag{2.7}$$

With $\hat{\Omega}_p$ is the residual covariance matrix VAR order p.

5. Diagnostic test of VAR model

The diagnostic test can be divided into two parts, namely the parameter significance test and the model conformity test (consisting of multivariate white noise assumption assay and the normal multivariate distribution of the residual).

a. Significance test

A good VAR model is a model whose parameters are significant, or the parameter values are different from zero. In general, if $\emptyset_{i,jk}$ is a parameter of VAR, $i=1,2,...,p$ dan $j=1,2,...,m$ and $k=1,2,...,m$. $\hat{\emptyset}_{i,jk}$ is the estimated value of the parameter , and $SE(\hat{\emptyset}_{i,jk})$ is the standard error of the estimated value $\hat{\emptyset}_{i,jk}$, the parameter significance test can be done as follows

   H_0: $\emptyset_{i,jk} = 0$ or VAR model parameter equal to zero

   H_1: $\emptyset_{i,jk} \neq 0$ or VAR model parameter are not equal to zero

H_0 is rejected if the value of $\left|t_{hit}\right| > t_{\frac{\alpha}{2},df=n-M}$, with M = number of parameters or by using p (*p-value*), is reject H_0 if *p-value* $< \alpha$, with α is the level of significance error.

b. Test the suitability of model

The model conformity test includes model adequacy and assumption of the normal multivariate distribution of residuals.

   1. Multivariate test White noise from residual.
      Multivariate tests White noise is to ensure the residuals of the model are not correlated with each other. The test used is Portmanteau test.

   2. Test of Residual Assumption of Multivariate Distribution
      Assumptions to be met in VAR modeling are residuals that have a normal multivariate distribution. An examination of a normal multivariate distribution can be done by generating q-q plots of values :

$$d_t^2 = \left((\hat{e}_t - \bar{\hat{e}}_t)'\hat{\Omega}^{-1}(\hat{e}_t - \bar{e})\right) t = 1, ..., n \tag{2.8}$$

with

t	= t- observation
$\hat{e}_t$	= residual of each observation in the column vector
$\bar{\hat{e}}_t$	= residual average vector of each column
$\hat{\Omega}$	= residual covariance matrix
n	= number of variables

The hypothesis used is

H_0: normal multivariate distributed residuals

H_1: residuals are not normally multivariate distributed

H_0 fails to be rejected, if the value of $d_t^2 \leq \chi^2_{m;0,5}$ has a percentage over 50% of the amount data.

6. Methodology

Problem identification is done by observing the production process and visit several departments to collect information, mainly in the Quality Assurance department. After the problem information, hereinafter called problem formulation in this research is how to determine autocorrelated multivariate control chart on quality parameter of cooking oil. Furthermore, data is done in the Quality Assurance department to then performed data processing and data analysis. The data collected include data parameter of cooking oil. Test parameters of cooking oil in data processing are FFA, PV, IV, CP, and Color data (consist of Red and Yellow Color). After the data is collected, an autocorrelation test is performed and discarded on the data, followed by factor analysis to reduce the existing variables to less. After forming several factors, the formation of time series model where the residual result from time series model which then made multivariate map and will be analyzed.

7. Result and Discussion

7.1. Autocorrelation test

Autocorrelation test is used to know whether there is a correlation of each variable with time changes. The autocorrelation test of each variable can be seen visually through the graph plot ACF (Autocorrelation Function). If there is a lag line (the blue vertical line) that exceeds the significant limit (the red horizontal line) then it can be concluded that the data is autocorrelated. Graph of autocorrelation of test parameters of cooking oil can be seen in figure 1.
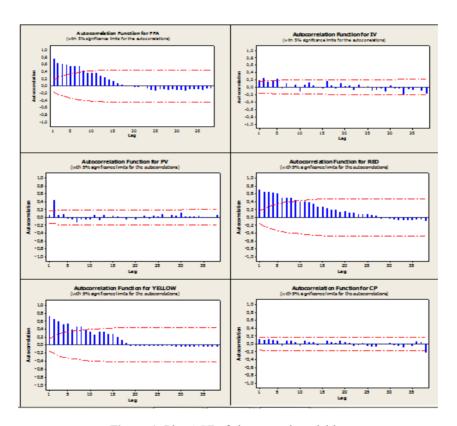

Figure 1. Plot ACF of six research variables

From the test results show that all parameters are autocorrelated. Thereby, the convention control chart is suitable to analyze the data. The data must be processed using VAR model.

7.2. Factor Analysis

Factor analysis test is conducted to see the number of factors formed from the overall parameter data. Factor analysis is a process an approach to find the relationship between a number of variables that are mutually independent one another so the number of initial variables can be grouped into several factors. The value of correlation between each variable with the factors formed can be seen in the component matrix table (**Table 1**) and rotated component matrix (**Table 2**).

Table 1. Component Matrix

Parameter	Component	
	1	2
FFA	,554	,509
IV	-,728	,517
PV	,239	-,456
Red	,790	,368
Yellow	,667	,409
CP	,757	-,475

Table 2. Rotated Component Matrix

Parameter	Component	
	1	2
FFA	,751	-,038
IV	-,231	-,863
PV	-,107	,503
Red	,843	,221
Yellow	,775	,110
CP	,280	,849

The matrix component from the rotation process shows a clearer distribution of variables. Grouping parameters to the factors is based on value of component in Table 2. The FFA parameter is grouped in factor 1 because the value component 1 (0,751) is larger than component 2 (0.038). Parameter IV is grouped in factor 2 because the value component 2 (0,863) is larger than component 1 (0.231). The FFA, IV, PV, Color Red, Color Yellow, and CP parameters have been grouped to 2 factors. Therefore the parameters are grouped into :
    1. Physical factors consisting of parameters FFA, Color Red and Color Yellow.
    2. Chemical factors consisting of parameters IV, PV and CP.

7.3. VAR Model for Chemical Factor

    Model identification is performed to determine the appropriate VAR order. To determine the corresponding VAR order, it can be seen from the value of Akakike Information Criterion (AIC). The smaller the AIC value the more appropriate the model. From the AIC value of chemical factor it is known that the smallest AIC value refers to the VAR model (2) so as to select the VAR model (2) for the formation of the VAR model on the chemical factor. In **Table 3** we can see the VAR model parameters (2) chemical factors that have significant.
From the parameter of the VAR model significant, it can be formed into the equation of VAR model (2) as follows.

$$\begin{bmatrix} X_{2,t} \\ X_{3,t} \\ X_{6,t} \end{bmatrix} = \begin{bmatrix} 49,79605 \\ 0 \\ 10,46470 \end{bmatrix} + \begin{bmatrix} 0 & 2,41716 & -0,35637 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} \begin{bmatrix} X_{2,t-1} \\ X_{3,t-1} \\ X_{6,t-1} \end{bmatrix} + \begin{bmatrix} 0,22071 & 0 & 0 \\ 0,00179 & 0,41874 & 0 \\ -0,06075 & 0 & 0 \end{bmatrix} \begin{bmatrix} X_{2,t-2} \\ X_{3,t-2} \\ X_{6,t-2} \end{bmatrix}$$

The equations are further translated for each series

    $X_{2,t} = 49,79605 + 2,41716\ X_{3,t-1} + -0,35637\ X_{6,t-1} + 0,22071\ X_{2,t-2}$
    $X_{3,t} = 0,00179\ X_{2,t-2} + 0,41874\ X_{3,t-2}$
    $X_{6,t} = 10,46470 + -0,06075\ X_{2,t-2}$

    The model above shows that the model is a time series multivariate model. Where to forecast variable X_2 (IV) influenced by variable X_3 (PV) and variable X_6 (CP). Where to forecast variable X_6 (CP) also influenced by variable X_2 (IV). Furthermore, the model suitability test consisted of multivariate white noise test of residual and residual

assay test of normal multivariate distribution. From the model conformity test, it is known that the residual model VAR (2) chemical factor is not correlated with each other and residual also has multivariate normal distribution.

Tabel 3 Estimation of VAR Model Parameter (2) Chemical Factor

Equation	Parameter	Estimate	Standard Error	t Value	Pr > |t|
x2	CONST1	49.79605	5.06176	9.84	0.0001
	AR1_1_1	0.00000	0.00000		
	AR1_1_2	2.41716	1.10701	2.18	0.0307
	AR1_1_3	-0.35637	0.17770	-2.01	0.0468
	AR2_1_1	0.22071	0.07849	2.81	0.0056
	AR2_1_2	0.00000	0.00000		
	AR2_1_3	0.00000	0.00000		
x3	CONST2	0.00000	0.00000		
	AR1_2_1	0.00000	0.00000		
	AR1_2_2	0.00000	0.00000		
	AR1_2_3	0.00000	0.00000		
	AR2_2_1	0.00179	0.00023	7.81	0.0001
	AR2_2_2	0.41874	0.07298	5.74	0.0001
	AR2_2_3	0.00000	0.00000		
x6	CONST3	10.46470	1.45727	7.18	0.0001
	AR1_3_1	0.00000	0.00000		
	AR1_3_2	0.00000	0.00000		
	AR1_3_3	0.00000	0.00000		
	AR2_3_1	-0.06075	0.02373	-2.56	0.0115
	AR2_3_2	0.00000	0.00000		
	AR2_3_3	0.00000	0.00000		

7.4. VAR Model for Physical Factor.

VAR model identification for physical factor has the same step as VAR model for chemical factor. To determine the corresponding VAR order, it can be seen from the value of Akakike Information Criterion (AIC). A model is better if the AIC value is minimum. From the AIC value of physical factors it is known that the smallest AIC value refers to the VAR model (2) so as to select the VAR model (2) for the formation of the VAR model on the physical factor. **Table 4** shows the VAR model parameters (2) significant physical factors.

Tabel 4 Estimation of VAR Model Parameter (2) Physical Factor

Equation	Parameter	Estimate	Standard Error	t Value	Pr > |t|
x1	CONST1	0.01616	0.00398	4.06	0.0001
	AR1_1_1	0.22051	0.09431	2.34	0.0216
	AR1_1_2	0.00000	0.00000		
	AR1_1_3	0.00000	0.00000		
	AR2_1_1	0.28860	0.09436	3.06	0.0029
	AR2_1_2	0.00000	0.00000		
	AR2_1_3	0.00014	0.00006	2.36	0.0206
x4	CONST2	0.50064	0.13476	3.72	0.0004
	AR1_2_1	0.00000	0.00000		
	AR1_2_2	0.36782	0.08481	4.34	0.0001
	AR1_2_3	0.00000	0.00000		
	AR2_2_1	0.00000	0.00000		
	AR2_2_2	0.34222	0.08506	4.02	0.0001
	AR2_2_3	0.00000	0.00000		
x5	CONST3	8.19033	2.05286	3.99	0.0001
	AR1_3_1	0.00000	0.00000		
	AR1_3_2	0.00000	0.00000		
	AR1_3_3	0.40271	0.10104	3.99	0.0001
	AR2_3_1	0.00000	0.00000		
	AR2_3_2	0.00000	0.00000		
	AR2_3_3	0.21251	0.10110	2.10	0.0383

From the parameter of the VAR model significant, it can be formed into the equation of VAR model (2) as follows.

$$\begin{bmatrix} X_{1,t} \\ X_{4,t} \\ X_{5,t} \end{bmatrix} = \begin{bmatrix} 0,01616 \\ 0,50064 \\ 8,19033 \end{bmatrix} + \begin{bmatrix} 0,22051 & 0 & 0 \\ 0 & 0,36782 & 0 \\ 0 & 0 & 0,40271 \end{bmatrix} \begin{bmatrix} X_{1,t-1} \\ X_{4,t-1} \\ X_{5,t-1} \end{bmatrix} + \begin{bmatrix} 0,28860 & 0 & 0,00014 \\ 0 & 0,34222 & 0 \\ 0 & 0 & 0,21251 \end{bmatrix} \begin{bmatrix} X_{1,t-2} \\ X_{4,t-2} \\ X_{5,t-2} \end{bmatrix}$$

The equations are further translated for each series

$X_{1,t} = 0,01616 + 0,22051\, X_{1,t-1} + 0,28860\, X_{1,t-2} + 0,00014\, X_{5,t-2}$
$X_{4,t} = 0,50064 + 0,36782\, X_{4,t-1} + 0,34222\, X_{4,t-2}$
$X_{5,t} = 8,19033 + -0,40271\, X_{5,t-1} + 0,21251\, X_{5,t-2}$

The model above shows that the model is a time series multivariate model to forecast variable X_1 (FFA) is influenced by variable X_5 (Color Yellow). Furthermore, the model suitability test consisted of multivariate white noise test of residual and residual test of normal multivariate distribution. From the model conformity test, it is known that the residual model VAR (2) physical factors are not correlated with each other and the residual has also multivariate normal distribution.

7.5. Residual Multivariate control chart VAR Model for Chemical Factor

The residuals of the VAR model (2) for chemical factors that have been proven independence and the multivariate normal distribution are further compiled into control charts which can be seen in **Figure 2**
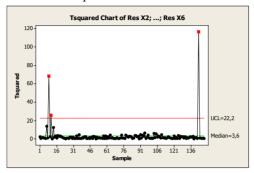

Figure 2. Residual Multivariate Control Chart Chemical – First Iteration

Figure 2 shows that a multivariate control chart that has been formed for chemical factors still has residuals out of control limits. Furthermore, residuals out of the control limits may be disposed of in order to obtain fully in-control residuals.
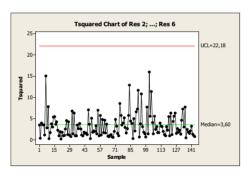

Figure 3. Residual Multivariate Control Chart Chemical factor under in control condition

Figure 3 shows the residual multivariate control chart of chemical factors that have been in full in control condition with a limit of Upper Control Limit (UCL) of 22.18 and a median of 3.60.

7.6. Residual Multivariate control chart VAR Model for Physical Factor

The residuals of the VAR model (2) for chemical factors that have been proven independence and the multivariate normal distribution are further compiled into control charts which can be seen in Figure 4.
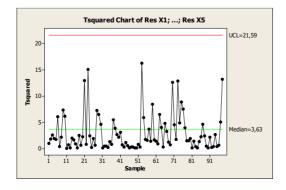
Figure 4. Residual Multivariate Control Chart Physical factor under in control condition

Figure 4 shows the residual multivariate control chart of physical factors that have been in full in control condition with a 21.59 Upper Control Limit (UCL) limit and a median value of 3.63.

8.   Conclusion and Suggestions

Some of the quality parameters used in this study are FFA, IV, PV, color red, yellow color, CP. From the results of research conducted, it is known that the quality parameters of cooking oil are correlated and autocorrelated each other. Therefore, the appropriate control chart to be used is the T^2 Hotelling multivariate control chart of the residual time series model. Factor analysis is conducted to form quality parameters into two factors, namely physical factors and chemical factor. Physical factors consist of parameter FFA, color red, color yellowr. Chemical factor consist of parameter IV, PV, and CP. From the formation of time series model for physical factors and chemical factors it is known that the model corresponding to each factor is VAR (2) model. T^2 Hotelling multivariate control chart from residual model VAR (2) for chemical factor has upper control limit (UCL) of 22,18 and median value 3,60. The T^2 Hotelling control chart of the residual VAR model (2) for physical factors has a control upper limit (UCL) of 21.59 and a median value of 3.63. T^2 Hotelling multivariate control chart from the residual VAR model to control the quality of cooking oil with correlated and autocorrelated quality parameters.

Refrences

Jarrett, J. E. and Pan, X. (2007) 'The quality control chart for monitoring multivariate autocorrelated processes', *Computational Statistics and Data Analysis*, 51(8), pp. 3862–3870. doi: 10.1016/j.csda.2006.01.020.

Kandananond, K. (2014) 'Guidelines for applying statistical quality control method to monitor autocorrelated prcoesses', *Procedia Engineering*. Elsevier B.V., 69, pp. 1449–1458. doi: 10.1016/j.proeng.2014.03.141.

Lu, C.-W. and Reynolds, M. R. (1999) 'EWMA Control Charts for Monitoring the Mean of Autocorrelated Processes', *Journal of Quality Technology*, 31(2), pp. 166–188. doi: 10.1080/00224065.1999.11979913.

Montgomery, D. (2009) *Introduction to statistical quality control*, *John Wiley & Sons Inc.* doi: 10.1002/1521-3773(20010316)40:6<9823::AID-ANIE9823>3.3.CO;2-C.

Wei, W. (2006) 'Time series analysis: Univariate and multivariate methods 2nd edition', (October).

Hamilton, JD. (1994) ' Time Series Analysis, Princeton University Press, New Jersey**.**

Biographies

Ivan Pudjiharjo earned B.S. in Industrial Engineering from Widya Mandala Surabaya Catholic University Surabaya Indonesia

Ig. Jaka Mulyana is a Senior Lecturer in Industrial Engineering Department, Widya Mandala Surabaya Catholic University Surabaya Indonesia. He earned B.S. in Agricultural Industrial Technology from Gadjah Mada University Jogjakarta Indonesia and Masters in Industrial Engineering from Sepuluh Nopember Institute of Technology Surabaya Indonesia. He has published journal and conference papers. His research interests include quality engineering, lean manufacturing and supply chain management

Luh Juni Asrini is a lecturer in Industrial Engineering Department, Widya Mandala Surabaya Catholic University Surabaya Indonesia. He earned her bachelor degree in Mathematic Science from Mataran University Lombok Indonesia and master degree in Industrial Statistic from Sepuluh Nopember Institute of Technology Surabaya Indonesia. He has published journal and conference papers. His research interests include quality engineering