2018 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM 2018)

Bangkok, Thailand
16-19 December 2018

Pages 1-636

IEEE Catalog Number: CFP18IEI-POD
ISBN: 978-1-5386-6787-3

Copyright © 2018 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP18IEI-POD
ISBN (Print-On-Demand):	978-1-5386-6787-3
ISBN (Online):	978-1-5386-6786-6
ISSN:	2157-3611

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

Table of Contents

Supply Chain Management 1

Dedicated Agility: A New Approach for Designing Production Networks 1
Günther SCHUH, Jan-Philipp PROTE, Bastian FRÄNKEN, Julian AYS, Sven CREMER

Contractual Barriers and Energy Efficiency in the Crude Oil Supply Chain 6
Roar ADLAND, Haiying JIA

Carbon Footprints of Construction Industries: A Global, Supply Chain-linked Analysis 11
Parinaz TOUFANI, Murat KUCUKVAR, Nuri Cihat ONAT

An Approach for Rolling Planning of Migration in Production Networks 17
Günther SCHUH, Jan-Philipp PROTE, Marco MOLITOR, Sven CREMER

Lead Time Quotation Under MTO and MTS Delivery Modes with Endogenous Demand 22
Erfan ASGARI, Yannick FREIN, Ramzi HAMMAMI

Modelling the Causal Relationship Among Variables that Influencing the Capability of Dairy Supply Chain in Indonesia 27
Aries SUSANTY, N. B. PUSPITASARI, A. BAKHTIAR, N. SUSANTO, D. KURNIA

Building Last Mile Delivery Scenarios: A Case Study of Melbourne 32
Kolawole EWEDAIRO, Prem CHHETRI, Jago DODSON, Shams RAHMAN

Supply Chain Management 2

Review of Refrigerated Inventory Control System for Perishable Products 36
Dyah SATITI, Ahmad RUSDIANSYAH, Ratna Sari DEWI

Supply Chain Configuration Modeling for Multi-product Multi-echelon 41
Sinta SULISTYO, Derana ADILIA, Nur Aini MASRUROH

Supplier Selection Method: A Case-study on a Car Seat Manufacturer in Thailand 46
Naragain PHUMCHUSRI, Supasit TANGSIRIWATTANA, Poom LUANGJARMEKORN

Improving Traceability System in Indonesian Coconut Oil Company 51
Ivan GUNAWAN, Iwan VANANY, Erwin WIDODO, Jaka MULYANA

Vehicle Dispatch Problem with Precedence Constraints for Marine Container Drayage 56
Etsuko NISHIMURA, K. SHINTANI, A. IMAI

An Impact-wave Analogy for Managing Cyber Risks in Supply Chains 61
Daniel SEPULVEDA ESTAY, Pablo GUERRA

Supply Chain Management 3

Redistribution Problem of Relief Supply for Post-disasters 66
Etsuko NISHIMURA, Kentaro UCHIDA

A Green Vehicle Routing Method for the Regional Logistics Center 71
Jun-Der LEU, Andre KRISCHKE, Yi-Ping LEE, Larry Jung-Hsing LEE, Yi-Wei HUANG

Multi-period Maximal Covering Location Problem with Modular Facilities for Locating Emergency Facilities with Back-up Services 76
Roghayyeh ALIZADEH, Tatsushi NISHI

Intelligent Transport Systems and its Impact on Performance of Road Freight Transport in Zimbabwe 80
Wiseman MUCHAENDEPI, Charles MBOHWA, James KANYEPE

Supply Chain Risk Mitigation Strategies in Automotive Industry: A Review 84
Ehsan DEHDAR, Amir AZIZI, Salar AGHABEIGI

Customer Value Chain Analysis for Sustainable Reverse Logistics Implementation: Indonesian Mobile Phone Industry 89
Hesti MAHESWARI, Gatot YUDOKO, Akbar ADHIUTAMA

Safety, Security and Risk Management 1

Safety Outcomes in Small-Size and Medium-Size Metal Enterprises in Indonesia: Are They Different? 93
Nachnul ANSORI, Ari WIDYANTI, Iftikar SUTALAKSANA

Process Safety and Performance Improvement in Oil Refineries Through Active Redundancy and Risk Assessment Method - A Case Study 98
Loganathan MADAMPATTY KRISHNASWAMY, Subhas Sarma NEOG, Sunil RAI

Risk Assessment Among Thai and Foreign Workers in Construction Companies 103
Kosinchai PAWTHAISONG, Manutchanok JONGPRASITHPORN, Chaiporn VONGPISAL, Nantakrit YODPIJIT

Fuzzy Risk Prioritization of the Failure Modes in Rolling Stocks 108
Behzad GHODRATI, Mohammad Javad RAHIMDEL, Amir TAGHIZADEH VAHED

Performance Evaluation with a Z-number Data Envelopment Analysis: A Case Study of a Petrochemical Plant 113
Shohre SADEGHSA, Ali SIADAT, Reza TAVAKKOLI-MOGHADDAM, Maliheh VAEZ-ALAEI

A Critical Review of Current Safety Assessment Method of Chemical Safety in Toys 118
Shu Lun MAK, Winnie CHIU, H. K. LAU

Safety Barriers Against Common Cause Failure and Cascading Failure: Literature Reviews and Modeling Strategies 122
Lin XIE, Mary Ann LUNDTEIGEN, Yiliu LIU

Production Planning and Control

A SPH Simulation Approach using the Carreau Model for the Free Surface Flow of Adhesives 128
Marcus RÖHLER, Vakul KUMAR, Christoph RICHTER, Gunther REINHART

Capacity Allocation Among Suppliers in the Presence of Spot Market 133
Tarun JAIN, Jishnu HAZRA

A Mix Integer Programming Model for Bi-objective Single Machine with Total Weighted Tardiness and Electricity Cost Under Time-of-use Tariffs 137
Bobby KURNIAWAN, Alfian Akbar GOZALI, Wei WENG, Shigeru FUJIMURA

An Improved Multiobjective Evolutionary Algorithm for Solving the No-wait Flow Shop Scheduling Problem 142
Tsung-Su YEH, Tsung-Che CHIANG

Multiply-connected Neuro PID Control 148
Kun-Young HAN, Hee-Hyol LEE

As Simple as Possible but no Simpler – An Inquiry into Approximations for a Re-order Point Inventory Control Model with Gamma-distributed Demand 153

Anders THORSTENSON

Cost-model for Energy-oriented Production Control 158
Martin ROESCH, Christoph BERGER, Stefan BRAUNREUTHER, Gunther REINHART

Human Factors 1

Barriers to Flexible Work Arrangements (FWA) in Malaysian Knowledge-based Industries 163
Arnifa ASMAWI, Noor Shahaliza OTHMAN

A Study on Developing Customer Groups in Consolidated Financial Services Using Qualitative and Quantitative Analysis 168
Yoonki KIM, Kyung-Jun LEE, Joong Hee LEE, Jihwan LEE, Yong Min KIM, Huamin JIN, Jaeyoon KANG, Myung Hwan YUN

Human Factors Approach for Powered Transfemoral Prostheses Conceptual Design 173
Manutchanok JONGPRASITHPORN, Nantakrit YODPIJIT, Jutamat PINITLERTSAKUN, Juthamas SIRIWATSOPON, Gary GUERRA, Teppakorn SITTIWANCHAI

Evaluation of Activation Function Capability for Intent Recognition and Development of a Computerized Prosthetic Knee 178
Manutchanok JONGPRASITHPORN, Nantakrit YODPIJIT, Gary GUERRA, Uttapon KHAWNUAN

Effect of Coffee Intake on Heat Rate Variability and Driving Performance in Sleep-deprived Condition 183
Titis WIJAYANTO, Tasya ALMA, Bonifatius Bramantya WISNUGRAHA, Syam Rachma MARCILLIA, Galang LUFITYANTO

Dealing with Aging and Multigeneration Workforce Topics at Top Global Companies: Evidence from Public Disclosure Information 187
Igancio CASTELLUCCI, Pedro AREZES, Martin LAVALLIERE, Nelson COSTA, Olivia DADALT, Joseph COUGHLIN

User Experience Analysis in Industry 4.0 - The Use of Biometric Devices in Engineering Design and Manufacturing 192
Yuri BORGIANNI, Erwin RAUCH, Lorenzo MACCIONI, Benedikt Gregor MARK

Reliability and Maintenance Engineering 1

Reliability Analysis for MOSFET Based on Wiener Process 197
Huiling ZHENG, Houbao XU

Lease-oriented Opportunistic Maintenance for Series-parallel Systems by Integrating Capacity Balancing 202
Bowen SUN, Tangbin XIA, Ya SONG, Wenyu GUO, Lifeng XI

Improved Lease-oriented Opportunistic Maintenance for Two-machine One-buffer System under Product-service Paradigm 207
Wenyu GUO, Tangbin XIA, Guojin SI, Bowen SUN, Ershun PAN

Condition-based Selective Maintenance for Multicomponent Systems Under Environmental and Energy Considerations 212
Abdelhakim KHATAB, El-Houssaine AGHEZZAF, Claver DIALLO, Uday VENKATADRI

Mining System Degradation Assessment Based on Mathematical Analysis 217
David VALIS, Jakub GAJEWSKI, Kamila HASILOVA, Marie FORBELSKA

System Condition Assessment Based on Mathematical Analysis 222
David VALIS, Libor ZAK, Zdenek VINTR

ACO-based Parallel Machine Scheduling Considering Both Setup Time and Run-based Preventive Maintenance with Reliability Constraints 227
Siqi CHEN, Liya WANG

Reliability and Maintenance Engineering 2

Optimum Preventive Maintenance Policy for a Mechanical System Using Semi-markov Method and Golden Section Technique 232
Girish KUMAR, J.P. VARGHESE

Remaining Fatigue Life Prediction of Topside Piping Using Response Surface Models 237
Arvind KEPRATE, R.M. Chandima RATNAYAKE

Application of Prognostics and Health Management to Low Demand Systems: Use of Condition Data to Help Determine Function Test Interval 242
Pengyu ZHU, Jayantha P. LIYANAGE

Reliability Modeling and Analysis of Nuclear Power System with Common Signal Based on Goal-oriented (GO) Method 247
Yuan-Yuan YANG, Hui-Na MU, Guang-Liang CHEN, Xiao-Jian YI, Hong-Mei YAN, Chen LIU

Low Demand Safety Instrumented System: Update of Function Test Intervals with Layer of Protection Analysis in the Operational Phase 252
Pengyu ZHU, Jayantha P. LIYANAGE

Decision Support Tools for Preventive Maintenance Intervals and Replacement Decisions of Engineering Assets 257
Madhu MENON, Gopinath CHATTOPADHYAY, Ray BEEBE

Maintenance Planning Based on Reliability Assessment of Multi-state Multi-component System 262
Niketa JAIN, Ajay Pal Singh RATHORE, Rakesh JAIN, Om Prakash YADAV

Healthcare Systems and Management 1

Inventory Management Information System in Blood Transfusion Unit 268
Fitra LESTARI, Ulfah ULFAH, Fitri ROZA APRIANIS, Suherman SUHERMAN

Modified Model of Radiographer Scheduling Problem for Sequential Optimization 273
Toshiyuki MIYAMOTO, Kuniyuki HIDAKA

Women in Informatics Engineering Career: Perspective from Hofstede Cultural Dimension and Dayak Tribe's Cultural Values 278
Ika WINDIARTI, Agung PRABOWO, Muhammad Haris QAMARUZZAMAN, Sam'ani SAM'ANI

On a Discrete-time Epidemic Model based on a Continuous-time SEIR Model Under Feedback Vaccination Controls 283
Marta FERNANDEZ-FERNANDEZ, Santiago ALONSO-QUESADA, Manuel DE LA SEN, Aitor J. GARRIDO

Training System for the Medical Procedure of Cannulation 288
Olga Katherine VERA BONILLA, Maria del Mar CHAVARRO CEBALLOS, Andres Felipe BARCO SANTA, Elise VAREILLES

Managing Product Recalls in Healthcare Supply Chain 293
Raja JAYARAMAN, Fatima ALHAMMADI, Mecit Can Emre SIMSEKLER

Pareto Optimization for Hospital Alliance Reverse Referral Decision 298
De TENG, Na LI

Engineering Education and Training

The Concept of Systems Thinking Education- Moving from the Parts to the Whole 303
Sigal KORAL KORDOVA, Moti FRANK

Using QFD to Normalize a Culture of Innovation in an Engineering SME 307
Pearse O'GORMAN, Margaret MORGAN, Rudy VAN MERKOM

Continuous Improvement of Industrial Engineering Education Based on PDCA Method and Structural Importance 311
Yaqi GUO, Hengyi GAO, Zhiqiang CAI, Shuai ZHANG, Fangyu HU

Effect of Needham Model Based Interactive Multimedia Material Towards Students' Achivement in Digital Logic Gates 316
M.F. LEE, S.N. MAT YUSOFF

An Approach to Integrate Skills Development in Open Distance Learning (ODL) Environment: Part 2 321
Tlotlollo HLALELE, Mothibeli PITA, S. SUMBANYAMBE

Competency-based Assessment of Industrial Engineering Graduates: Basis for Enhancing Industry Driven Curriculum 326
Ryan Jeffrey CURBANO, S. G. Y. MADRID, C. T. NARVACAN, J. R. PUENTENEGRA

Training in Maintenance Engineering. Curricula Proposal 331
Miguel DIAZ-CACHO, Jorge MARCOS-ACEVEDO, Javier SANCHEZ-REAL, Salah CHIKH

Technology and Knowledge Management 1

Green Manufacturing's Adoption by Indonesian SMEs: A Conceptual Model 336
Ira SETYANINGSIH, Nurul INDARTI, Wakhid CIPTONO

A Database Administration Tool to Model the Configuration Projects 341
Sara SHAFIEE, Steffan Callesen FRIIS, Lukasz LIS, Ulf HARLOU, Yves WAUTELET, Lars HVAM

An Application of Agent-based Modeling and Simulation in Tacit Knowledge Transfer Effectiveness and Individual Performance through the Consideration of Feedback Mechanism 346
Fadillah RAMADHAN, Afrin Fauzya RIZANA, Rayinda Pramudtya SOESANTO, Amelia KURNIAWATI, Iwan Inrawan WIRATMADJA

Application of Last Planner® System in Product Concept Development Phase: Use of Lean Concepts in Academic Project Work 351
Prashanth SIVAGANESH, R.M. Chandima RATNAYAKE

Project Success as a Function of Organizational Knowledge Management 356
Uriel ISRAELI, Amnon GONEN

How Much "Talent" is Needed for Organizational Learning? A Study of Labor Market Entrants in an Innovation-oriented Country 361
Mait RUNGI

Foundation of Project Interdependencies: Perspective of Organizational Theories 366
Mait RUNGI

Systems Modeling and Simulation 1

A Detailed Modeling and Comparative Analysis of Hysteresis Current Controlled Vienna Rectifier and Space Vector Pulse Width Modulated Vienna Rectifier in Mitigating the Harmonic Distortion on the Input Mains 371

Hari Charan NANNAM, Atanu BANERJEE

Monte Carlo Simulation Forecasting of Maritime Ferry Safety and Resilience 376
Ewa DABROWSKA, J. SOSZYŃSKA-BUDNY

JIS: Pest Population Prognosis with Escalator Boxcar Train 381
Kin-Woon YEOW, Matthias BECKER

Modeling the Dynamics of an Agile Scrum Team in the Development of a Single Software Project 386
Phoebe Mae CHING, Jose Edgar MUTUC

The Stowage of Containers for Inland Shipping: A System for Maximizing Containers Allocation and Meeting Stability Requirements 391
Stefano FAZI

Creation of Lattice Structures for Additive Manufacturing in CAD Environment 396
Dinh Son NGUYEN, Thanh Hai Tuan TRAN, Duc Kien LE, Van Than LE

Operational Aircraft Routing Problem: Some Insights in the Capacitated Maintenance Resources 401
Miner ZHONG, Felix T.S. CHAN, S. H. CHUNG

Operations Research 1

Generic Framework for Stress Testing of Real-time Systems 406
Afshan NASEEM, Asad Waqar MALIK, Shoab Ahmed KHAN

A Distributionally Robust Chance Constrained Model to Hedge Against Uncertainty in Steelmaking-continuous Casting Production Process 411
Shengsheng NIU, Shiji SONG, Jian-Ya DING

Capacitated Assortment Optimization with Pricing under the Paired Combinatorial Logit Model 417
Daihan ZHANG, Zhenghe ZHONG, Chuning GAO, Rui CHEN

A Lagrange Multiplier-based Regularization Algorithm for Image Super-resolution 422
Bai LI, Lixin MIAO, Canrong ZHANG, Wenming YANG

A Genetic Algorithm for Generating Travel Itinerary Recommendation with Restaurant Selection 427
Budhi WIBOWO, Monica HANDAYANI

A Continuous-Time Unit-Based MILP Formulation for the Resource-Constrained Project Scheduling Problem 432
Mario GNÄGI, Adrian ZIMMERMANN, Norbert TRAUTMANN

A Rule-based Greedy Algorithm to Solve Stowage Planning Problem 437
Dalia RASHED, Mohamed GHEITH, Amr ELTAWIL

Operations Research 2

An MILP Model for the Internal Audit Scheduling Problem 442
Volkan YILDIRIM, M. Ebru ANGÜN, Temel ÖNCAN

Stochastic Storage/retrieval Scheduling Considering Shuttle Failure in Multi-shuttle Automated Storage and Retrieval System 447
Jun WEN, Xinglu LIU, Peng YANG

A Continuous-Time MILP Formulation for the Multi-Mode Resource-Constrained Project Scheduling Problem 452
Mario GNÄGI, Tom RIHM, Norbert TRAUTMANN

Exact Method for Single Vessel and Multiple Quay Cranes to Solve Scheduling Problem at Port of Tripoli - Lebanon 457
Ali SKAF, Sid LAMROUS, Zakaria HAMMOUDAN, Marie-Ange MANIER

Mathematical Modelling for a Semi-obnoxious Inverse Line Location Problem 462
Mehdi GOLPAYEGANI, Haleh MORADI, Reza TAVAKKOLI-MOGHADDAM

Aggregate Production Framework for Efficiency Analysis and its Implementation by Linear Programming 467
Soobin CHOI, Jaedong KIM

Service Innovation and Management 1

The Effect of Owner Creativity on Organizational Creativity: Empirical Evidence from Surakarta Indonesia 473
Retno INDRIARTININGTIAS, Budi HARTONO, Subagyo SUBAGYO

A Study of Continuance Intention to Adopt Cloud Services: The Moderating Effect of Users' Motivation 477
Chan-Sheng KUO, Yowei KANG

Service Innovation in Retail Industry: What Can We Learn from Target? 482
Rocky REYNALDO, Augustina Asih RUMANTI, Iwan Inrawan WIRATMADJA

Benefit Segmentation of Online Customer Reviews Using Random Forest 487
Kenjiro TORIZUKA, H. OI, Humiaki SAITOH, Syohei ISHIZU

Government Subsidy, Industry-university-research Collaborative Innovation and Resources Allocation Efficiency 492
Miao LI, Yuan HUANG

The Use of Design-science to Define Information Content Requirements for IT Service Catalogs 497
Franziska SCHORR, Lars HVAM

Big Data and Analytics 1

Sentiment Analysis of Airport Customer Reviews 502
Arian DHINI, Dita Anggraeni KUSUMANINGRUM

Understanding Adoption of Big Data Analytics in China: From Organizational Users Perspective 507
Kin Meng SAM, Chris CHATWIN

A Local-branching Heuristic for the Best Subset Selection Problem in Linear Regression 511
Tamara BIGLER, Oliver STRUB

Early Detection of Events as a Decision Support in the Milk Collection Planning 516
Atefe ZAKERI, Morteza SABERI, Omar KHADEER HUSSAIN, Elizabeth CHANG

Smart City Application and Analysis: Real-time Urban Drainage Monitoring by IoT Sensors: A Case Study of Hong Kong 521
Kin Lok KEUNG, Carman Ka Man LEE, Kam Hung NG, Chun Kit YEUNG

Cultivating Growth and Radical Innovation Success in the Fourth Industrial Revolution with Big Data Analytics 526
Magnus PENKER, Soo Beng KHOH

Clustering Subway Station Arrival Patterns Using Weighted Dynamic Time Warping 531
Rui WANG, Nan CHEN, Chen ZHANG

Service Innovation and Management 2

Event-driven Architecture for Sensor Data Integration for Logistics Services 536
Jens LEVELING, Luise WEICKHMANN, Christian NISSEN, Christopher KIRSCH

Reaching Project Success Through Vision and Artifact and the Mediating Role of Team Spirit 541
Sayed Muhammad FAWAD SHARIF, Naiding YANG, Fouzia KANWAL, Sayed Kifayat SHAH

A Human Centered Design Framework to Support Product-service Systems 545
Thomson Chi Shing WONG, Moon Kyoung JANG, Seung Ki MOON, Zhong Yang CHUA, Haining ZHANG, Hyung Sool OH

Marketing Management Challenges – A Nordic Small and Medium Size Enterprises (SMEs) Perspective 550
Yonas Zewdu AYELE, Abbas BARABADI

Consolidating Orders in a Crowdsourcing Delivery Network 555
Daniel Y. MO, Yue WANG, Nicole CHAN

Co-creation of Value Using Social Media in the Service Industry: An Empirical Case Study of Service Innovation in a Banking and Finance Company 560
Asle FAGERSTRØM, Ravi VATRAPU, J. OTRE STØRKSEN

Innovation Models for Public and Private Organizations: A Literature Review 565
Tariq AL HAWI, Imad ALSYOUF, Mickael GARDONI

Quality Control and Management

A Comparative Study of Several Group Runs Type Control Schemes 570
Zhi Lin CHONG, Jing Yi WONG, Michael Boon Chong KHOO, Sok Li LIM, Wai Chung YEONG

Benchmarking Quality Management Maturity in Industry 575
Bheki MAKHANYA, Hannelie NEL, Jan Harm PRETORIUS

Testing the ISO 9001:2015 Process Model: An Australasian Empirical Study 580
Nisansala PALLAWALA, Nihal JAYAMAHA, Nigel GRIGG

Assessment of Quality of Service at the Main Laboratory of the LAB Aimed at Satisfying Internal Customer Needs 586
Sambil Charles MUKWAKUNGU, Eric BAKAMA, Alice Kabamba LUMBWE, Magaly Madeleine BOLIPOMBO, Dorcas NIATI, Kidoge IBRAHIMU, Jonathan Eljadael KASONGO, Charles MBOHWA

Effects of Suggestion System on Continuous Improvement: A Case Study 592
Sorina MOICA, Cristina VERES, Liviu MARIAN

Total Quality Management: A Framework for Quality Improvement in Indian Manufacturing Small and Medium Enterprises 597
R. KAJA BANTHA NAVAS, S. PRAKASH, A. John RAJAN, Subramaniam ARUNACHALAM

Project Management 1

Hybridization of Development Projects Through Process-related Combination of Agile and Plan-driven Approaches 602
Michael RIESENER, Christian DÖLLE, Johanna AYS, Julian AYS

Risk of Quantity Increase in Vietnamese Construction Projects 607
Soo Yong KIM, Ha Duy KHANH, Van Thanh BINH

A Literature Review on Approaches for the Retrospective Utilisation of Data in Engineering Change Management 612
Armin TALE-YAZDI, Niklas KATTNER, Lucia BECERRIL, Udo LINDEMANN

Data Analysis in Engineering Change Management – Improving Collaboration by Assessing Organizational Dependencies Based on Past Engineering Change Information 617
Niklas KATTNER, Jan MEHLSTAEUBL, Lucia BECERRIL, Udo LINDEMANN

Dimensioning a Product Development Project Portfolio Using a Closed Queueing Network 622
Jesper FINK ANDERSEN, Carsten LAURIDSEN, Bo Friis NIELSEN

The Contextual Utility of Agile Project Management Maturity 627
Budi HARTONO, Dennis KUNARSITO, Citra NUDIASARI

A BIM-based Labor Crew Moving Path Obstruction Detection Approach 632
Qiankun WANG , Zeng GUO, Qianyao LI, Tingting MEI, Shi QIAO, Weiwei ZUO

Project Management 2

Decision Criteria for Contractor Selection in Construction Industry: A Literature Review 637
Maria Creuza BORGES DE ARAUJO, Luciana ALENCAR, Caroline MOTA

A Review of Methods, Tools and Techniques Used for Risk Management in Transport Infrastructure Projects 641
Indra GUNAWAN, Tiep NGUYEN, Leonie HALLO

The Influence of IM Use on Job Satisfaction in Cross-organizational Projects 646
Ziyue WANG, Yali ZHANG, Jun SUN, Chrissie Diane TAN, Menghua LU

Key Influencing Factors for Cross-organizational R&D Project Stakeholder Management 651
Chrissie Diane TAN, Yali ZHANG, Jun SUN, Ziyue WANG, Ganggang ZHENG

Robust Project Scheduling with Unreliable Resources: A Variable Neighbourhood Search Based Heuristic Approach 656
Ripon K CHAKRABORTTY, Alireza ABBASI, Michael J RYAN

Manufacturing Systems 1

Simultaneous Balancing and Buffer Allocation to Serial Lines with Bernoulli Stations 661
Wenchong CHEN, Hongwei LIU, Wei LIU

Enhancement of the Design Process for Manufacturing Systems via a Multi-criteria Evaluation Method Creating a Control Loop for Guided Improvement 666
Michael FELDMETH, Egon MÜLLER

SMED in the North American Secondary Wood Products Industry 671
Urs BUEHLMANN, Enis KUCUK

Hybridizing MJF Based Additive Layer and CNC Supported Subtractive Manufacturing for Enhancing Productivity in PD Design Iterations 675
R.M. Chandima RATNAYAKE

Effect of Temperature on the Quality of Welding Beads Deposited with CMT Technology 680
Pascal ROBERT, Matthieu MUSEAU, Henri PARIS

Production Management System for Small and Medium Sized Manufacturing Enterprises 685
Lei WANG, Peng LIU, Shengqian JIANG, Yiming XUE, Kun WANG, Xiangnan LI

Manufacturing Systems 2

An Application of Just-in-time as a Strategy for Competitive Advantage: The Case of a Non-alcoholic Company in South Africa 690
Sambil Charles MUKWAKUNGU, Eric BAKAMA, Magaly Madeleine BOLIPOMBO, Charles MBOHWA

Environmental Management Systems in Thai Small and Medium-Sized Manufacturing Firms 695
Pittawat UEASANGKOMSATE, Chidchanok WONGSUPATHAI

Similarity-search and Prediction Based Process Parameter Adaptation for Quality Improvement in Interlinked Manufacturing Processes 700
Jacqueline SCHMITT, Jochen DEUSE

An Integer Linear Programming Approach for the Combined Cell Layout Problem 705
Miguel F. ANJOS, Philipp HUNGERLAENDER, Kerstin MAIER

Reliability Analysis for a Divisional Seru Production System with Stochastic Capacity 710
Xinzi HAN, Zhe ZHANG, Yong YIN

Predicting the Tensile Strength of Extrusion-blown High Density Polyethylene Film Using Machine Learning Algorithms 715
Firas ALHINDAWI, Safwan ALTARAZI

Investigation of Assessment and Maturity Stage Models for Assessing the Implementation of Industry 4.0 720
Marco UNTERHOFER, Erwin RAUCH, Dominik T. MATT, Salinee SANTITEERAKUL

Engineering Economy and Cost Analysis

A Systematic Literature Review of the Implementation of Cost of Quality 726
Bheki MAKHANYA, Hannelie NEL, Jan Harm PRETORIUS

Integrated Controlling Tool with Plan-fact Analysis 731
Zoltan SEBESTYEN, Tamas TOTH

Decision Making on Sustainable Forest Harvest Production Using Goal Programming Approach (Case Study: Iranian Hyrcanian Forest) 736
Soma ETEMAD, Soleiman MOHAMMADI LIMAEI, Leif OLSSON, Rasoul YOUSEFPOUR

Operational Management of the Microgrid System for the Energy-sensitive Manufacturing Plant 741
Weiwei CUI, Yujie YANG

Analysis on Influence Factors of Enterprises' Costs for Compliance to Consumer Product Standard 746
Xia LIU, Ruan LI, Xiaolei FENG, Bisong LIU, Qian WU

American Productivity Center Method for Measuring Productivity in Palm Oil Milling Industry 754
Fitra LESTARI, Irsan NUARI, Vera DEVANI

Decision Analysis and Methods 1

A Two-layer Data Envelopment Analysis Model for Sustainable Performance Evaluation 758
Willy ZALATAR, Eppie CLARK

A Hybrid Approach Using SWOT and AHP to Prioritize the Factors for Indigenous Production of Automobiles: A Case of Pakistani Automotive Industry 763
Yasir AHMAD, Zaid BIN KHALID

World-Class Engineering: Designing for Quality, Reliability, Maintenance, and Supply Chain Management Using the Analytic Hierarchy Process 768
Travis C. MALLETT

A Predictive Approach to Define the Best Forecasting Method for Spare Parts: A Case Study in Business Aircrafts' Industry 773
Reza BABAJANIVALASHEDI, Armand BABOLI, Muhammad Kashif SHAHZAD, Romy TONADRE

A New Approach to Integrate Resilience Engineering and Business Process Re-engineering Design 778
Maliheh VAEZ-ALAEI, Armand BABOLI, Reza TAVAKKOLI-MOGHADDAM

A Methodology to Integrate Artificial Intelligence with the Design Structure Matrix Approach 783
Chuks MEDOH, Arnesh TELUKDARIE

Prediction of Critical Infrastructure Accident Losses of Chemical Releases Impacted by Climate-weather Change 788
Magda BOGALECKA, Krzysztof KOŁOWROCKI

Decision Analysis and Methods 2

Data-driven Defense Strategies for an Infrastructure Network against Multiple Interdictions 793
Jing JIANG, Xiao LIU

Solving the Bidirectional Multi-Period Full Truckload Vehicle Routing Problem with Time Windows and Split Delivery for Bulk Transportation Using a Covering Model 798
Apichit MANEENGAM, Apinanthana UDOMSAKDIGOOL

Using Multicriteria Decision Making Methods to Manage Systems Obsolescence 803
Imen ZAABAR, Yvan BEAUREGARD, Marc PAQUET

Assessing Information Security Risk Using Markov Chain 808
Daniel TSE, Xiaoting PAN, Yuan ZONG, Jiaxi LIU, Qinyan YANG

A Comparison of Two Location Models in Optimizing the Decision-making on the Relocation Problem of Post Offices at Narvik, Norway 814
Hao YU, Wei Deng SOLVANG

The Effect of Decision Maker's Risk Attitude on Inventory Policy: An Empirical Studies 819
Nur Aini MASRUROH, Elok PITALOKA, Wangi PANDAN SARI

Quantitative Assessment of Economic, Social and Environmental Impacts of Critical Infrastructure Disruptions 824
Agnieszka BLOKUS

Information Processing and Engineering

Latent Variable Structured Bayesian Network for Cyanobacterial Risk Pre-control 829
Peng JIANG, X. LIU, J. ZHANG, S. H. TE, K. Y. H. GIN

Identifying and Defining Knowledge-work Waste in Product Development: A Case Study on Lean Maturity Assessment 834
Felix P SANTHIAPILLAI, R.M. Chandima RATNAYAKE

Regional Freight Volume Forecasting with Incomplete Data of Origin/Destination Freight Volumes 839
Jiahao LIU, Guangxin OU, Zhaoxia GUO

Application of Industry 4.0 Towards Achieving Business Sustainability 844
Megashnee MUNSAMY, Arnesh TELUKDARIE

Enterprise Definition for Industry 4.0 849
Arnesh TELUKDARIE, Michael SISHI

Classification System for Egyptian Heritage Buildings 854
Mohamed MARZOUK, Noha SALEEB, M. M. ELSHARKAWY, Asmaa EID, Mohamed ALI, Mahmoud METAWIE

Development of Halal Audit Information System (HAIS) and its Implementation Evaluation Based on Time–cost Trade–off Using Integer Linear Programming (ILP) 859
Iwan VANANY, Diesta Iva MAFTUHAH, Adi SOEPRIJANTO, Faiz Rahman ARIFIN

Supply Chain Management 4

Understanding Influential Factors in Selecting Sustainable Third-party Logistics Providers: An Interpretive Structural Modeling and MICMAC Analysis 864
Xiangce MENG, Zhaojun YANG, Jun SUN

Scenarios in Intermodal Transportation Planning 869
Wichitsawat SUKSAWAT NA AYUDHYA

Inventory Analysis on a Single-Echelon Supply Chain System by Considering Carbon Emissions 874
Petrus Setya MURDAPA, I. Nyoman PUJAWAN, Putu Dana KARNINGSIH, Arman Hakim NASUTION

Application of Mathematical Model for Raw Material Storage Management 879
Chompoonoot KASEMSET, Aunchalee PETCHALALAI

Biomass Supply Chain Design, Planning and Management: A Review of Literature 884
Fitri AGUSTINA, Iwan VANANY, Nurhadi SISWANTO

Forecasting of Used Product Returns for Remanufacturing 889
Mohammed Woyeso GEDA, C.K. KWONG

Supplier Integration Roles in New Product Development: The Automotive Suppliers' Perspective 894
Kanagi KANAPATHY, Kooi Onn CHU

Supply Chain Management 5

Locating Facility with Multi-period and Dynamic Demand: A Case Study of Chemical Fertilizer Store in Thailand 899
Natdabhorn SAPKHOKING, Arthit APICHOTTANAKUL, Komkrit PITIRUEK

Alignment Between Enterprise Green Supply Chain and Green Information System: An Analysis of Four Cases 904
Zheng WU, Zhaojun YANG, Jun SUN, Yu ZOU

Decision Support System of the Single Track Railway Rescheduling with Predictive Delay 909
Ahmad RUSDIANSYAH, Kurnia ISWARDANI

The Identification of Supplier Selection Criteria Within a Risk Management Framework Towards Consistent Supplier Selection 913
Tumelo LESISA, Annlize MARNEWICK, Hannelie NEL

Optimal Vehicle Routing for Parcel Delivery with Considering Two Time Periods 918
Gitae KIM

Revenue and Cost Sharing Mechanism for Effective Remanufacturing Supply Chain 923
Tatsuya INABA

The Robustness of Warranty: Wholesale Pricing Contract vs Two-part Tariff 928
Houping TIAN, Qingqing YAN, Changxian LIU

Project Management 3

Development and Evaluation of a Workshop Concept to Support Tailoring of Complex Product Development Processes 933
Christoph HOLLAUER, Julia RAST, Udo LINDEMANN

Scrum Agile Project Management Methodology Application for Workflow Management: A Case Study 938
Laura CARNEIRO, Ana Carolina SILVA, Luciana ALENCAR

The Mediating Effect of Knowledge Internalization on the Relationship Between Dual Learning Behaviors and Technological Innovation Performance in the High-tech Enterprises 943
Fangmei WANGDU, Naiding YANG, Sayed Muhammad FAWAD SHARIF

Visualised Decision Support in Industrial Project Monitoring and Control 948
Fan LI, François VERNADAT, Ali SIADAT, Li ZHENG

Assessing the Agility of Teams within Mechatronic Product Development 952
Lucia BECERRIL, Christoph HOLLAUER, Udo LINDEMANN

The Role of Participation in the Factory Planning Process 957
Uwe DOMBROWSKI, Alexander KARL, Christoph IMDAHL

Supply Chain Management 6

Sustainable Dynamic Pricing for Perishable Food with Stochastic Demand 961
Ghada MOUSTAFA, Noha GALAL, Khaled EL-KILANY

Who Has More Incentive to Make Sustainable Investment, Supplier or Manufacturer? 966
Qian YUAN, Xiutian SHI

Supplier Selection Model Development for Modular Product with Substitutability and Controllable Lead Time 970
Yosi Agustina HIDAYAT, Tota SIMATUPANG

Factors Affecting Sustainable Supply Chain Management: The Indian Steel Sector 976
Dayal S. PRASAD, Rudra P. PRADHAN, Kunal GAURAV, Saurav DASH

An Incentive-based Bi-level Optimization Model for Collaborative Green Product Line Design 981
Shuang MA, Songlin CHEN, Xiaotian CAI

Safety, Security and Risk Management 2

Critical Infrastructure Impacted by Climate Change Safety and Resilience Indicators 986
Krzysztof KOŁOWROCKI, Joanna SOSZYNSKA-BUDNY, Mateusz TORBICKI

Critical Infrastructure Impacted by Operation and Climate Change Safety and Resilience Indicators 991
Krzysztof KOŁOWROCKI, Joanna SOSZYNSKA-BUDNY, Mateusz TORBICKI

Longtime Prediction of Climate-weather Change Influence on Critical Infrastructure Safety and Resilience 996
Mateusz TORBICKI

Information Privacy Practices in Organizations: Activities, Knowledge and Skill Requirements for Information Technology Professionals 1001
Yasaman ATEFI MONFARED, Younes BENSLIMANE, Zijiang YANG

On Context, Issues, and Pitfalls of Expert Judgement Process in Risk Assesment of Arctic Offshore Installations and Operations 1006
Masoud NASERI, Abbas BARABADI

Food Safety and Halal Food Risks in Indonesian Chicken Meat Products: An Exploratory Study 1011
Hana Catur WAHYUNI, Iwan VANANY, Udisubakti CIPTOMULYONO

IMU Based Real Time Underground Soil Movement Detection System: An Illustrative Investigation 1016
R. M. WEERASINGHE, D. BUDDIKA, R.M. Chandima RATNAYAKE

Human Factors 2

Impact of Socioeconomic Factors on the Levers Influencing Households' Participation in Recycling Programs in Zambia 1021
Bupe G. MWANZA, Arnesh TELUKDARIE, Charles MBOHWA

Evaluation of Physical and Motor Function in an Aging Female Population – Preliminary Results 1026
Marek BURES, Jana BENESOVA, Martin KABA

Age-related Differences in Work Motivations: The Case of SMEs 1031
Riitta FORSTEN-ASTIKAINEN, Susanna KULTALAHTI, Matti MUHOS

What Humans Act in Robotic Surgery 1035
Fabio FRUGGIERO, Marcello FERA, Alfredo LAMBIASE, Salvatore MIRANDA

The Influence of Family on Self-reflexive and Emotional Antecedents of the Transformational Leader 1041
Lirios ALOS-SIMO, Antonio VERDU-JOVER, Jose Maria GOMEZ-GRAS, Marina ESTRADA-DE-LA-CRUZ

Risk Reduction Among Adult Walker Users: An Ergonomic Innovation 1046
Ezrha C. GODILANO, Edgardo M. BALDOVINO JR., Jeizel Abbigael D. CAHENDE, Marielle B. TERRIBLE

WMSD Risk Reduction Among Grocery Shoppers and Clerks by Redesigning Double Basket Shopping Carts 1051
Ezrha C. GODILANO, Joshua John G. ALMORO, Al John D.P. BULAHAN, Edward Kenneth Allen C. GARCIA

Intelligent Systems 1

Towards a Knowledge based Support for Risk Engineering When Elaborating Offer in Response to a Customer Demand 1056
Rania AYACHI, Delphine GUILLON, Francois MARMIER, Elise VAREILLES, Michel ALDANONDO, Thierry COUDERT, Laurent GENESTE, Yvan BEAUREGARD

A Cooperative Multi-agent-based Musical Scoring System for Tsugaru and Nambu Shamisen 1061
Juichi KOSAKAYA, Reiko KAWAMORITA, Ming-Fang HSU

Contact Coordinate Measurements of Free-form Surfaces: A FIS for Optimal Distribution of Measurement Points 1068
Marek MAGDZIAK, R.M. Chandima RATNAYAKE

Particle-swarm Krill Herd Algorithm 1073
Gai-Ge WANG, Wenyin GONG, Xiaobo LIU, Danyu BAI, Teng REN, Xuesong YAN

Industrial Smart Services: Types of Smart Service Business Models in the Digitalized Agriculture 1081
Achim KAMPKER, Philipp JUSSEN, Benedikt MOSER

Construction Resource Localization Based on UAV-RFID Platform Using Machine Learning Algorithm 1086
Daeyoun WON, Man-Woo PARK, Seokho CHI

Industry 4.0 in Practice – Identification of Industry 4.0 Success Patterns 1091
Jörg PUCHAN, Alexander ZEIFANG, Jun-Der LEU

Intelligent Systems 2

Combining IOT and Android APP System for Upper Limb Stroke Rehabilitation 1096
Keng-Chieh YANG, Chia-Hui HUANG, Chieh-Yow CHIANGLIN

Traffic Voting System to Achieve the Balance Between Privacy and Trip Chain Data Acquisition 1101
Wentian CHEN, Kai ZHANG, Zhiheng LI

A Predictive Model for Forecasting Spare Parts Demand in Military Logistics 1106
Hanjun LEE, Jaedong KIM

Advanced Automation for SMEs in the I4.0 Revolution: Engineering Education and Employees Training in the Smart Mini Factory Laboratory 1111
Luca GUALTIERI, Rafael ROJAS, Giovanni CARABIN, Ilaria PALOMBA, Erwin RAUCH, Renato VIDONI, Dominik T. MATT

A Real Time Stare in Market Strategy for Supply Chain Financing Pledge Risk Management 1116
Benhe GAO, Qian ZHOU, Shigang LI, Xinglu LIU

Involving the Manufacturing System within its Planning Phase 1120
Matthias BARTELT, Bernd KUHLENKÖTTER

Reliability and Maintenance Engineering 3

Environmental Sustainability in Maintenance Management of Public Transport Systems: Literature Review 1125
Iyad ALAWAYSHEH, Imad ALSYOUF

Reliability Assessment for Multi-area Load Frequency Control Systems with Degraded Components 1130
Zhiying WU, Huadong MO, Junlin XIONG

Spectral Graph Wavelet based Component Clustering for System Reliability Analysis 1135
Ping ZHANG, Xiaoyan ZHU

Preparation of Preventive and Predictive Maintenance Guidelines for Emulsion Preparation and Processing Plant Using Risk Management Techniques 1140
Dushan I. JAYASINGHE

Reliability Analysis of the Crude Oil Transfer System in the Oil Port Terminal 1145
Agnieszka BLOKUS, B. KWIATUSZEWSKA-SARNECKA

Debugging Process Oriented Software Reliability Models and Their Goodness-of-Fit 1150
Shinji INOUE, Shigeru YAMADA

Mixture Lognormal Cox Regression Repair Model for Prediction of the Repair Time 1155
Yonas Zewdu AYELE, Abbas BARABADI, Fuqing YUAN

Healthcare Systems and Management 2

Preoperative Analysis for Clinical Features of Unsuspected Gallbladder Cancer Based on Random Forest 1160
Zhen ZHANG, Na LI, Hengyi GAO, Zhiqiang CAI, Shubin SI, Zhimin GEMG

Developing Customer Perception Based Organization Performance Measurement Framework for Healthcare Service 1165
I. Gede Mahatma Yuda BAKTI, Tri RAKHMAWATI, Sih DAMAYANTI, Sik SUMAEDI, Medi YARMEN

Data Accessibility for Biotech and Medicine Industries: A Cross-stakeholder Perspective 1170
Zih-Han WANG, Wei JENG

'Strategy Making', Not Re-engineering: Thinking Ahead, Again, and Across for Process Innovation in Home Care 1175
Desmond WONG, Yee Lin HIEW

A Bi-objective Credibility-based Fuzzy Mathematical Programming Model for a Healthcare Facility Location-network Design Problem 1181
Reza TAVAKKOLI-MOGHADDAM, Pooya POURREZA, Ali BOZORGI-AMIRI, Nastaran OLADZAD

Implementing and Using New Information Technology in Hospital Logistics 1186
D. KRITCHANCHAI, Per ENGELSETH, Sirirat SRISAKUNWAN

Design and Development of a Prototype for Measuring Range of Motion 1191
Manutchanok JONGPRASITHPORN, Nantakrit YODPIJIT, Thachamaporn CHANAROON, Thunjira PAIBOONRATTANAKORN, Teppakorn SITTIWANCHAI

E-Business and E-Commerce

e-Commerce Logistics – Contemporary Literature 1196
Hamid JAFARI

An ERP-based Solution for the Supply Chain Planning of Medium-sized Global Manufacturing Company 1201
Jun-Der LEU, Andre KRISCHKE, Yi-Ping LEE, Larry Jung-Hsing LEE, Yi-Wei HUANG

Integration of Small and Medium Enterprises for Industry 4.0 in the South African Water Services Sector: A Case Study for Johannesburg Water 1206
Pholo NTHUTANG, Arnesh TELUKDARIE

Observational Learning in the Product Configuration Process: An Empirical Study 1211
Yue WANG

Drone-delivery Using Autonomous Mobility: An Innovative Approach to Future Last-mile Delivery Problems 1216
HoJoon David YOO, Stanislav CHANKOV

Robust Password-keeping System Using Block-chain Technology 1221
Daniel TSE, Kaicheng LIANG, Bin CAI, Kecong HUANG

Operations Research 4

Lease Contract with Availability Target and Price Discount 1226
Hennie HUSNIAH, Rachmawati WANGSAPUTRA, Bermawi P. ISKANDAR

Profit Maximization in Inventory Routing Problems 1230
Anna ZAITSEVA, Lars Magnus HVATTUM, Sebastián URRUTIA

Using Iterated Greedy with a New Population Approach for the Flexible Job-shop Scheduling Problem 1235
Ghiath AL AQEL, Xinyu LI, Liang GAO, Wenyin GONG, Rui WANG, Teng REN, Guohua WU

Research on Overall Improvement of Production Efficiency: A Case Study Based on Value Stream Mapping Analysis in Automobile Decoration Products Manufacturing Industry 1240
Huang LI, Chunming YE, Zhenbin ZHOU, Xinyu ZHOU, Xiaoxue FU, Lingling PENG

Challenges of Digital Transformation: The Case of the Non-profit Sector 1245
Saeedeh SHAFIEE NAHRKHALAJI, Sara SHAFIEE, Mitra SHAFIEE NAHRKHALAJI, Lars HVAM

Technology and Knowledge Management 2

Developing the Strategies for AI Products based on the Technology Decomposition Framework 1250
Song-Kyoo KIM

Brain Utilization of MNCs in Japan Compared with that of Japanese Companies Overseas 1255
Masayuki KONDO

Integration of Scenarios in Product-service System Development - Combining Scenarios, Use Cases and Requirements Traceability 1259
Dominik WEIDMANN, Felix SEIBEL, Lucia BECERRIL, Niklas KATTNER, Jona LEHR, Markus MOERTL, Udo LINDEMANN

Integration of Scenario-based Requirements Forecast into Model-based Product-service System Planning 1264
Dominik WEIDMANN, Stefan WINKLER, Markus MOERTL

Methodology for Digitalization – A Conceptual Model 1269
Huey Yuen NG, Puay Siew TAN, Y. G. LIM

Value Chain from Good to Great: Multiple-case Study of Estonian Companies 1274
Kadri MÄNNASOO, Mait RUNGI, Heili HEIN, Helery TASANE

How to Use Configuration Software in “Less Routine Design” Situations? Some Modelling Propositions 1279
Abdourahim SYLLA, Delphine GUILLON, Luis GARCES MONGE, Elise VAREILLES, Michel ALDANONDO, Thierry COUDERT, Laurent GENESTE

Technology and Knowledge Management 3

Network Structure and Positional Relationship of the External and Internal Technology Acquisition based on the Firm Self-citation Patent Network 1284
Chao-Chih HSUEH

Appropriate Technology and Management for Sustainability 1289
Jayshree PATNAIK, Bhaskar BHOWMICK

Social Network Analysis in Lean Thinking: A Method for Improving Information Flow in Technical Integrity Management System Development 1293
Andika RACHMAN, R.M. Chandima RATNAYAKE

Engineering Management Qualification: A Comparative Study for South African Universities 1299
Samuel MLANGENI, Arnesh TELUKDARIE

Measuring Product Success: A Literature Study 1304
Trifandi LASALEWO, Subagyo SUBAGYO, Hari Agung YUNIARTO, Budi HARTONO

Determinant of Startups’ Fund-raising Value: Entrepreneur and Firm Characteristic 1309
Pimolrat SATHAWORAWONG, Natcha THAWESAENGSKULTHAI, Kanis SAENGCHOTE

Configuration Lifecycle Management – Future of Product Configurators 1315
Anna MYRODIA, Thomas RANDRUP, Lars HVAM

Technology and Knowledge Management 4

Multiple Helix Approach in Advancing Sustainable Urban Energy Ecosystems 1320
Nina TURA, Ville OJANEN, Tuomas PALOVIITA, Sini PIIPARINEN

Time Estimation for Product Configuration Systems Projects 1327
Katrin KRISTJANSDOTTIR, Amartya GHOSH, Loris BATTISTELLO, Lars HVAM

Changes of Technological Knowledge Diversification within a Group of Inventors and Patent Value Corresponding to Technology Lifecycle 1332
Ryo TAKEMURA, Noritomo OUCHI

Improving Modularization in Industry by Introducing a New Model for Module Classification 1337
Dag RAUDBERGET, Fredrik ELGH

Two-dimensional Technology Profiling of Patent Portfolio 1342
Chung-Huei KUAN, Wei-Ming TU, Dar-Zen CHEN

Industry 4.0 Implementation Barriers in Small and Medium Sized Enterprises: A Focus Group Study 1348
Guido ORZES, Erwin RAUCH, Slavomir BEDNAR, Robert POKLEMBA

Channel-based Phase and Power Controllable Intelligent Wireless Power Transfer Architecture Using 4 by 4 Planar Array Antennas 1353
Kwonhong LEE, Jinhyoung KIM, Jinwook SEO, Hyunyong YU, Cheolung CHA

Technology and Knowledge Management 5

Content Analysis Approach: A Review on the Extent of Science and Engineering Curriculum Meet Competency Requirements for Testing, Inspection and Certification Industry 1356
Fanny TANG

A Conceptual Interaction Cycle Between Individual and Group Absorptive Capacity with Social Integration Mechanism and Cohesive Learning Group as Moderating Variables 1361
Andy Susilo LUKITO-BUDI, Nurul INDARTI

The Complexity of Megaprojects in Developing Countries: A Literature Review 1366
Retno Wulan DAMAYANTI, Budi HARTONO, Andi Rahadiyan WIJAYA

A Novel Concept for Solid Debris Extraction Technique from Used Lubricants for Predictive Maintenance 1371
Sontinan INTASONTI, Tadpon KULLAWONG, Surapol RAADNUI

Systems Modeling and Simulation 2

Simulation-based Multiple Automated Guided Vehicles Considering Charging and Collision-free Requirements in Automatic Warehouse 1376
C.K.M. LEE, K.L. KEUNG, K.K.H. NG, Daniel C.P. LAI

Simulation and Optimization of Production Line in Em-plant based Assembly Workshop 1381
Hongying SHAN, Lina LI, Yu YUAN, C. WANG

Lean, Simulation and Optimization: The Case of Steering Knuckle Arm Production Line 1386
Hongying SHAN, Yu YUAN, Yanxiang ZHANG, Lina LI, Chuang WANG

Efficient Modular Product Platform Design of Mechatronic Systems 1391
Günther SCHUH, Christian DÖLLE, Sebastian BARG, Maximilian KUHN, Stefan BREUNIG

Informational Approach to Global Optimization with Input Uncertainty for Homoscedastic Stochastic Simulation 1396
Haowei WANG, Jun YUAN, Szu Hui NG

Energy Efficient Motion Planning of Dual-Armed Robots with Pickup Point Determination for Transportation Tasks 1401
Tatsushi NISHI, Yuki MORI

System Dynamics Approach for the Assessment of Leanness of Organizations 1406
Abhijeet K. DIGALWAR, Akshay BEDEKAR, Mohit AGRAWAL

Operations Research 3

Protecting a Sensitive Queue from Arrival Variability 1411
Mathieu VANDENBERGHE, Stijn DE VUYST, El-Houssaine AGHEZZAF, Herwig BRUNEEL

Multi-criteria Mathematical Model for Partial Double Track Railway Scheduling in Urban Rail Network 1416
Erlangga BAYU SETYAWAN, Dida Diah DAMAYANTI, Anton Abdulbasah KAMIL

Vehicle Routing: Application of Travelling Salesman Problem in a Dairy Distributor 1421
Rafael PALHARES, Maria Creuza BORGES DE ARAUJO

A Matheuristic for a Real-world Variant of the Multiple Traveling Salesman Problem 1426
Philipp BAUMANN

Robust Periodic Vehicle Routing Problem with Service Time Uncertainty 1431
Mingyao QI, Wangqi XIONG, Qingte ZHOU, Shijia HUA

Picking Station Location in Traditional and Flying-V Aisle Warehouses for Robotic Mobile Fulfillment System 1436
Lijuan FENG, Xinglu LIU, Mingyao QI, Shijia HUA, Qingte ZHOU

Decision Analysis and Methods 3

Novel SKU Classification Approach for Autonomous Inventory Planning 1441
Fengyu WANG, Huey Yuen NG, Thai Ee NG

Fundamental Design Types of Modular Product Platforms 1446
Sebastian BARG, Günther SCHUH, Christian DÖLLE

Optimal Overbooking Decision for Perishable Resources with Jointly Stochastic Booking and Show-up Requests 1451
Suppasit JONGCHEVEEVAT, Naragain PHUMCHUSRI, Amonsiri VILASDAECHANONT

Multicriteria Inventory Classification of Diabetes Drugs Using a Comparison of AHP and Fuzzy AHP Models 1456
Kaushik NAG, Magdy HELAL

Data-Based Identification Method for Jobshop Scheduling Problems Using Timed Petri Nets 1461
Tatsushi NISHI, Naoki SHIMAMURA

Development of a Methodology to Design Product Portfolios in Accordance to Corporate Goals Using an Evolutionary Algorithm 1466
Michael RIESENER, Christian DÖLLE, Lukas SCHMITT, Merle-Hendrikje JANK

Public Perception of the Nuclear Research Reactor in Thailand 1471
Sarasinee TANTITAECHOCHART, Naraphorn PAOPRASERT, Kampanart SILVA

Manufacturing Systems 3

A Modified MOEA/D for Energy-efficient Flexible Job Shop Scheduling Problem 1476
Enda JIANG, Ling WANG

Radical Product Innovation in the New Zealand Food and Beverage Industry: The Effect of Company Age, Size, and Foreign Ownership 1481
Julawit PITRCHART, Nihal JAYAMAHA, Allan ANDERSON

Integrated Simulation Optimization for Layout Problems 1486
Henri PIERREVAL

Implementing FPGA based PID-controller for Extrusion to Reduce Raw Material Wastage 1491
Samreen HUSSAIN, Muhammad ISMAEEL, Adnan WAQAR, Muhammad Ali AMJAD, Muhammad Mubeen IQBAL, Muhammad SHAUR, Rimsha ARSHAD

Rapid Thermal Simulation of Powder Bed Additive Manufacturing 1498
Frédéric VIGNAT, Nicolas BERAUD, Francois VILLENEUVE

Energy Consumption Control of One Machine Manufacturing System with Stochastic Arrivals Based on Fuzzy Logic 1503
Eliana TORRES DUQUE, Zicheng FEI, Junfeng WANG, Shiqi LI, Yuanfang LI

Analysis of Product Designs for Product Recovery Using Linear Physical Programming 1508
Aditi D. JOSHI, Surendra M. GUPTA

Big Data and Analytics 2

Evidences of Technological Advantage Gains: The Case of Mergers and Acquisitions in the Agrichemical Industry 1513
Chun-Chieh WANG, Mu-Hsuan HUANG, Yu-Wei CHANG

Do Long-term Patents Have a Higher Citation Impact? 1518
Huei-Ru DONG, Dar-Zen CHEN, Mu-Hsuan HUANG

Categorization of Mergers and Acquisitions in Japan Using Corporate Databases: A Fundamental Research for Prediction 1523
Bohua SHAO, Kimitaka ASATANI, Ichiro SAKATA

Distributed-based Hierarchical Clustering System for Large-scale Semiconductor Wafers 1528
Seungchul LEE, Daeyoung KIM

A Learning Analytics Tool for Predictive Modeling of Dropout and Certificate Acquisition on MOOCs for Professional Learning 1533
Ruth COBOS, Lara OLMOS

Study on Unbalanced Binary Classification with Unknown Misclassification Costs 1538
Jun GAO, Lin GONG, JinYi WANG, ZhenChong MO

Data Analytics Framework for State Owned Enterprise of Bhutan 1543
Yadap SUBERI, Devi Bhakta SUBERI

Service Innovation and Management 3

Multinational Enterprises R&D in China, Government Subsidy Effect: An Empirical Research Based on Simultaneous Equations 1548
Jian WANG, Peng GUO, Qilei LIU

Sustainability-oriented Innovation (SOI) in Emerging Economies: A Preliminary Investigation from Indonesia 1553
Budi HARSANTO, Roula MICHAELIDES, Helga DRUMMOND

Business Logistics Optimization using Industry 4.0: Current Status and Opportunities 1558
Bag SURAJIT, Arnesh TELUKDARIE

Testing and Extending P-Transqual Public Transport Service Quality Model: A Causal Approach 1563
I. Gede Mahatma Yuda BAKTI, Tri RAKHMAWATI, Sih DAMAYANTI, Sik SUMAEDI, Medi YARMEN

How Kano's Performance Mediates Perceived SERVQUAL Impact on Kansei 1568
Markus HARTONO

A Study Regarding the Gap Between the Industry and Academia Expectations for College Student's Employability 1573
Feng-Ming SUI, Jen-Chia CHANG, Hsi-Chi HSIAO, Su-Chang CHEN, Dyi-Cheng CHEN

Visualize Organizational Perception of Core Value in the Company: An Experiment Employing Multi-dimensional Scaling and the Competing Value Framework 1578
Sanetake NAGAYOSHI, Jun NAKAMURA

Posters

Managing Outsourced Logistics Service Projects as Complex Networked Resources 1583
Fahad AWALEH, Per ENGELSETH

Location Analysis of Regional Disaster Relief Material Reserve Center: A Case Study in Sichuan Province, China 1588
Xuedong LIANG, Ruyun ZHANG, Canmian LIU

Hospital Capacity Planning for Special Economic Zone in Thailand: A Case Study in Kanchanaburi Province 1593
Sao Theary AN, D. KRITCHANCHAI

Optimizing (r, Q) Decisions Considering Misplaced Items: Lost-sales and Backorder Cases 1598
Linda L. ZHANG, G. Yazgi TUTUNCU, Ceki FRANKO

Analysis of Stackelberg Leadership Model Output Behavior under the Mechanism of Expanding Market Price 1603
Tyrone T. LIN, Shu Yen HSU, Chiao Chen CHANG

A Project Management with Allocating Advertising Budgets' Decision Analysis in Aesthetic Medicine Industry 1608
Hui-Tzu YEN, Tyrone T. LIN

Research on Service Industry Network Structure based on Social Network Analysis 1613
Xuedong LIANG, Yangjingjing ZHANG, Yue LU, Canmian LIU

Inequality Structure of Global Investment: Analysis and Simulation of an M&A Network 1618
Kimitaka ASATANI, Hiroko YAMANO, Masanao OCHI, Ichiro SAKATA

Using Time-dependent Attractiveness to Evaluate Dynamic Place-based Accessibility 1623
William H. K. LAM, Bi Yu CHEN, Agachai SUMALEE

On Setting Business Goal in Corporations 1628
Shin-Guang CHEN

Hotel Cancellation Strategies Under Online Advanced Booking 1632
YIfan HE, Pingping WEN, Yongquan LAN, Zhaowei MIAO

Optimal Cleaning Schedule of Photovoltaic Module 1637
Zhonghao WANG, ZhengGuo XU

Systems Analysis and Design of a Smart Traffic Service System for Predictive and Smarter Mobility and Safety in Roadway Work Zones 1642
Roger J. JIAO, James Y. TSUI

Operating Data-driven Predictive Analytics for Tele-diagnosis of Refrigeration Systems: A Case Study 1647
Tianyi LU, Jun DU, Roger J. JIAO

Text Mining-based Approach for Forecasting Spare Parts Demand of K-X Tanks 1652
Jaedong KIM

Minimization of Critical Infrastructure Accident Losses of Chemical Releases Impacted by Climate-Weather Change 1657
Magda BOGALECKA, Krzysztof KOŁOWROCKI

A Novel Two-stage Method of Selection of Sample Points for Surface Quality Estimation of Multi-hole Workpiece 1662
Delin HUANG, Shichang DU, Guilong LI, Tangbin XIA

One-Sided Synthetic Control Charts for Monitoring the Coefficient of Variation with Measurement Errors 1667
Kim Phuc TRAN, Huu Du NGUYEN, Quoc Thong NGUYEN, Wichai CHATTINNAWAT

Quality Evaluation of Diesel Marine Engine Based on Fuzzy Analytic Hierarchy Process and Improved Close Value Method 1672
Yuliang ZHOU, Shenghan ZHOU, YiYong XIAO, Wenbing CHANG

Research of Foreign Trade Equipment Preventive Maintenance Decision Scheme based on User Capability 1677
Weikang XUE, Weiwei CUI, Xiao HU, Xiaodong MA, Yao WANG

Research on Fault Diagnosis of Rolling Bearing Based on Wavelet Packet Transform and IPSO-SVM 1682
Yingxiang ZHONG, Fan HONG-LI, Jiping LU, Lu PANG, Yuanfang LI

Reliability and Efficiency Optimization Assisted by Genetic Algorithm to Design a Quadratic Boost DC/DC Converter 1687
Giuseppe MARSALA, Antonella RAGUSA

Degradation Modeling and Performance Monitoring of Electro-optical Detection System via Dynamic Bayesian Network 1693
Jinsong YU, Yiyu SHI, Diyin TANG, Hao LIU

Time-dependent Reliability Modelling Method Based on Load-strength Model in the Presence of Environmental Effects 1699
Jian-Chun ZHANG, Yu ZHAO, Xiao-Bing MA

Maintenance Planning Key Process Area: Case Study at Oil & Gas Industry in Indonesia 1704
Rahmat NURCAHYO, Dedy DARMAWAN, Yadrifil JANNIS, Ary KURNIATI, Muhammad HABIBURRAHMAN

A Multi-objective Framework for Designing Accelerated Degradation Tests Under Wiener Process Model 1709
Han WANG, Yu ZHAO, Xiao-Bing MA

Cold-standby Redundancy Optimization for Multi-type Production Systems Using NSGA-II 1714
Wei WANG, Yaofeng XU, Jiqing WEI, Wei QU

Multi-scale Configuration Design Method of Reconfigurable Manufacturing System Based on Living System Theory 1719
Sihan HUANG, Guoxin WANG, Siming WANG, Cong ZENG, Hongwei WANG, Yan YAN

Selective Maintenance Decision for Multistate Manufacturing System Based on Extended State Task Network 1725
Zhaoxiang CHEN, Yihai HE, Yixiao ZHAO, Xiao HAN, Zheng HE

Introducing a Holistic Profitability Model for Additive Manufacturing: An Analysis of Laser-powder Bed Fusion 1730
Frank Thomas PILLER, Reinhart POPRAWE, Johannes Henrich SCHLEIFENBAUM, Günther SCHUH, Sebastian BARG, Christian DÖLLE, Christian HINKE, Merle-Hendrikje JANK, Ruth JIANG, Wilhelm MEINERS, Michael RIESENER, Johannes SCHRAGE, Stephan ZIEGLER

The Layout Optimization Problem of Automobile Engine Production Line 1736
Hang LI, Ran LIU, Lun SHI

Applying the Axiomatic Design with Design Constraint to Redesign of Automatic Work-piece Changer 1741
Tossaporn ASSAWARUNGSRI, Nattawut JANTHONG

An Example of Machine Learning Applied in Additive Manufacturing 1746
Amelina DOUARD, Christelle GRANDVALLET, Franck POURROY, Frédéric VIGNAT

Critical Assessment on Dangerous Goods Storage Container Yard of Port: Case Study of LPG Tank Container 1751
Guanquan CHU, Guangyu LYU

Risk Identification Practice in Patient Safety Context 1756
Mecit Can Emre SIMSEKLER, Raja JAYARAMAN

Critical Infrastructure Safety Indicators 1761
Krzysztof KOLOWROCKI, Joanna SOSZYNSKA-BUDNY

Critical Infrastructure Impacted by Operation Safety and Resilience Indicators 1765
Joanna SOSZYNSKA-BUDNY, Krzysztof KOLOWROCKI

Detecting Technological Recombination for Potential R&D Exploration 1770
Xiao ZHOU, Lu HUANG

Strategy Transformation Through Cultural Tradition Innovation – A Case Study of Fenjiu Group of China Time-honored Brand 1775
Haibing LIU, Qingrui XU, Lihua WANG, Wenjing FENG, Li LIU

Study on Incentive Mechanism of Knowledge Sharing in Supply Chain Based on Evolutionary Game Theory 1780
Qiankun WANG , Shi QIAO

A Serious Game for Competence Development in Internet of Things and Knowledge Sharing 1786
Ugyen NIMA, Jannicke Baalsrud HAUGE, Rinzin WANGDI

A Chatbot-supported Smart Wireless Interactive Healthcare System for Weight Control and Health Promotion 1791
Chin-Yuan HUANG, Ming-Chin YANG, Chin-Yu HUANG, Yu-Jui CHEN, Meng-Lin WU, Kai-Wen CHEN

Product Platform Planning through Sensitivity Analysis and Improved QFD Approach 1796
Lei ZHANG, Hansi CHEN, Zhenlong YUAN, Xuening CHU

Performance Assessment of Product Modules Based on Usage Data Collected Through Embedded Sensors 1801
Hansi CHEN, Lei ZHANG, Xuening CHU

An Approach to Multidimensional Medical Data Analysis Based on the Skyline Operator 1806
Min CHE, Liya WANG, Zhibin JIANG

Asynchronous Multi-sensor Data Fusion with Decentralized IMM-PDAF 1811
Woo Jung PARK, Chang Ho KANG, Sun Young KIM, Chan Gook PARK

Support Reuse and Maintenance of Design Information in a Development Process of Custom Engineered Product 1816
Morteza POORKIANY, Joel JOHANSSON, Fredrik ELGH

Comparison of Clustering Methods for Obesity Classification 1821
Sung Hee AHN, Cai WANG, Gee Won SHIN, Donggun PARK, Yohan KANG, Jaramier JOIBI, Myung Hwan YUN

Building Material Price Forecasting Based on Multi-method in China 1826
Qiankun WANG , Tingting MEI, Zeng GUO, Lingwei KONG

Scoping a PIM System: A Supporting Framework 1831
Loris BATTISTELLO, Katrin KRISTJANSDOTTIR, Lars HVAM

Reengineering of Factory Planning Processes for the Realization of Digital Factory 4.0 1836
Uwe DOMBROWSKI, Alexander KARL, Alexander REISWICH

Emerging Simulation and VR for Green Innovations: A Case Study on Promoting a Zero-carbon Emission Platform in Hong Kong 1841
Cheuk Hang AU, Wai Ki YIU, Walter S. L. FUNG

Simulation Analysis on Energy Consumption of Multi-shuttle Automated Storage and Retrieval Systems 1846
Peng YANG, Wenjun XU, Shilu WANG

A Study on Designing Off-grid System Using HOMER Pro - A Case Study 1851
Sungjun JIN, Hyoungtae KIM, Tae Hyun KIM, Hansol SHIN, Kyuhyeong KWAG, Wook KIM

Integrating Hierarchical Task Analysis into Model-Based System Design using Airbus XHTA and IBM Rational Rhapsody 1856
Jakob ROTT, Julian WEIXLER, Alexander RABL, Peter SANDL, Mario WEIß, Birgit VOGEL-HEUSER

Integrated Cyber Physical Simulation Modelling Environment for Manufacturing 4.0 1861
Weidong LIN, Y.H. LOW, Y.T. CHONG, C.L. TEO

Multi-objective Design Space Exploration for the Integration of Advanced Analytics in Cyber-physical Production Systems 1866
Romuald Jupiter BAKAKEU NGASSAM, Jonathan FUCHS, Tallal JAVIED, Matthias BROSSOG, Jorg FRANKE, Hans-Henning KLOS, Werner EBERLEIN, Schirin TOLKSDORF, Joern PESHKE, Lars JAHN

Building Energy Conservation Strategies Evaluation and Simulation 1874
B-I WANG, Chien Ming LO, Min-Der LIN

Analysis and Optimization of Bottlenecks via Simulation 1879
Ji'ao YUAN, Runtong ZHANG

Community Detection and Growth Potential Prediction Using the Stochastic Block Model and the Long Short-term Memory from Patent Citation Networks 1884
Kensei NAKAI, Hirofumi NONAKA, Asahi HENTONA, Yuki KANAI, Takeshi SAKUMOTO, Shotaro KATAOKA, Elisa Claire ALEMÁN CARREÓN, Toru HIRAOKA

An Integrated Scheduling Strategy in Dynamic Scheduling of Manufacturing Execution System 1889
Hui DU, Dacheng LIU, Chuanshen WANG

Simple and Cost Effective System for Overall Equipment Efficiency Measurement 1895
Timo RAUTIO, Kari KUTUNIVA, Jarmo MÄKIKANGAS, Kari MÄNTYJÄRVI

Solving Profit Maximization Problem in Case of the Cobb-Douglas Production Function via Weighted AG Inequality and Geometric Programming 1900
Vedran KOJIĆ, Zrinka LUKAČ

Collaborative Innovation Using Bi-processes Cross-functional Team on New Product Development 1904
Yueen LI, Jiacheng ZHANG, Haiyan ZHANG

Systematic Selection, Adaptation and Integration of Quality Management Methods Into Quality Management Reporting 1909
Cosima Nadine FITZ, Guanwei HUANG

Optimizing Production and Inventory Decisions for Mixed Make-to-order/Make-to-stock Ready-made Garment Industry 1913
Aya ELMEHANNY, Tamer ABDELMAGUID, Amr ELTAWIL

Author Index