IFIP Advances in Information and Communication Technology 566

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> *IFIP is the global non-profit federation of societies of ICT professionals that aims at achieving a worldwide professional and socially responsible development and application of information and communication technologies.*

IFIP is a non-profit-making organization, run almost solely by 2500 volunteers. It operates through a number of technical committees and working groups, which organize events and publications. IFIP's events range from large international open conferences to working conferences and local seminars.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is generally smaller and occasionally by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is also rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

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Farhad Ameri · Kathryn E. Stecke ·
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Advances in Production Management Systems

Production Management for the Factory of the Future

IFIP WG 5.7 International Conference, APMS 2019
Austin, TX, USA, September 1–5, 2019
Proceedings, Part I

Springer

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ISSN 1868-4238 ISSN 1868-422X (electronic)
IFIP Advances in Information and Communication Technology
ISBN 978-3-030-29999-6 ISBN 978-3-030-30000-5 (eBook)
https://doi.org/10.1007/978-3-030-30000-5

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The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

The revolution in the information and communication technology (ICT) is rapidly transforming our world. The manufacturing industry is not an exception and it has already gone through profound changes due to the technological advancements in information technology. The digitization of production systems has been the most influential trend in the manufacturing industry over the past few years. The concept of Cyber-physical Production System (CPPS) is now being increasingly adopted in various sectors of the manufacturing industry to promote further intelligence, connectivity, and responsiveness throughout in the product value chain. There are several enablers of the vision of digitized, cyber-enabled, sustainable, and smart production system, including big data analytics, artificial intelligence, virtual and augmented reality, digital twin, and Human-Machine Interaction (HMI). These are the key components of the fourth industrial revolution and the main research thrusts in smart manufacturing and Industry 4.0 research community. The core challenge is how to improve the effectives and efficiency of production systems and, at the same time, enhance their sustainability and intelligence. Also, redefining the role of human in the new generation of automated production systems is a major challenge faced by researchers and practitioners.

APMS 2019 in Austin, Texas brought together leading international experts from academia, industry, and government in the area of production systems to discuss globally pressing issues in smart manufacturing, operations management, supply chain management, and Industry 4.0. A large international panel of experts reviewed all the papers and selected the best ones to be included in these conference proceedings. The topics of interest in APMS 2019 included Smart Supply Networks, Knowledge-Based Product Development, Smart Factory and IIOT Data-Driven Production Management, Lean Production, and Sustainable Production Management.

The proceedings are organized in two parts:

- Production Management for the Factory of the Future (Volume 1)
- Towards Smart Production Management Systems (Volume 2)

The conference was supported by the International Federation of Information Processing (IFIP) and was organized by the IFIP Working Group 5.7 on Advances in Production Management Systems and Texas State University. We would like to thank all contributors for their high-quality work and for their willingness to share their innovative ideas and findings. We are also indebted to the members of the IFIP Working Group 5.7, the Program Committee members, and the Scientific Committee members for their support in the review of the papers. Finally, we appreciate the

generous support from our sponsors, namely, Texas State University - College of Science and Engineering, the University of Texas at Dallas - Naveen Jindal School of Management, AlphaNodus, and PennState Service Enterprise Engineering.

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Contents – Part I

Lean Production

Total Quality Management and Quality Circles in the Digital Lean Manufacturing World 3
David Romero, Paolo Gaiardelli, Daryl Powell, Thorsten Wuest, and Matthias Thürer

Practical Boundary Case Approach for Kanban Calculation on the Shop Floor Subject to Variation 12
Christoph Roser and Daniel Nold

Options for Maintaining Weak FIFO in Parallel Queues. 21
Kaan Kalkanci and Christoph Roser

Sketching the Landscape for Lean Digital Transformation 29
Alireza Ashrafian, Daryl J. Powell, Jonas A. Ingvaldsen, Heidi C. Dreyer, Halvor Holtskog, Peter Schütz, Elsebeth Holmen, Ann-Charlott Pedersen, and Eirin Lodgaard

Cyber-Physical Waste Identification and Elimination Strategies in the Digital Lean Manufacturing World. 37
David Romero, Paolo Gaiardelli, Matthias Thürer, Daryl Powell, and Thorsten Wuest

Using Prescriptive Analytics to Support the Continuous Improvement Process. 46
Günther Schuh, Jan-Philipp Prote, Thomas Busam, Rafael Lorenz, and Torbjörn H. Netland

Lean Leadership in Production Ramp-Up. 54
Uwe Dombrowski and Jonas Wullbrandt

No Lean Without Learning: Rethinking Lean Production as a Learning System 62
Daryl Powell and Eivind Reke

The Effect of Team Size on the Performance of Continuous Improvement Teams: Is Seven Really the Magic Number?. 69
Daryl Powell and Rafael Lorenz

Lean and Digitalization—Contradictions or Complements?. 77
Rafael Lorenz, Paul Buess, Julian Macuvele, Thomas Friedli, and Torbjørn H. Netland

Production Management in Food Supply Chains

Neuro-Fuzzy System for the Evaluation of Soya Production and Demand in Brazilian Ports 87
Emerson Rodolfo Abraham, João Gilberto Mendes dos Reis, Aguinaldo Eduardo de Souza, and Adriane Paulieli Colossetti

Port Logistic Support Areas (PLSA) for Exporting Grains: An Exploratory Case-Study in the Largest Port in Latin America 95
Clayton Gerber Mangini, Irenilza de Alencar Nääs, Antônio Carlos Estender, Meykson Rodrigues Alves Cordeiro, and Agnaldo Vieira da Silva

Sustainability of Meat Chain: The Carbon Footprint of Brazilian Consumers 102
Raquel Baracat T. R. Silva, João Gilberto Mendes Reis, Thayla M. R. Carvalho Curi, Nilsa D. S. Lima, Solimar Garcia, and Irenilza de Alencar Nääs

Global Warming Impact in a Food Distribution System: A Case-Study in an Elementary School in Piaui 108
Genyvana Criscya G. Carvalho, Ivonalda Brito de Almeida Morais, Manoel Eulálio Neto, Raimundo Nonato Moura Rodrigues, Francisco Canindé Dias Alves, Irenilza de Alencar Nääs, and Oduvaldo Vendrametto

Broiler Meat Production in Piaui State: A Case Study 116
Eldelita A. P. Franco, Lilane de A. M. Brandão, José A. A. Luz, Kelly L. F. Gonçalves, and Irenilza de A. Nääs

Collaborative Production Chains: A Case-Study of Two Agri-Food Companies in Brazil 123
Yuri Claudio C. de Lima, Silvia Piva R. de Morais, Luis A. Mendes de M. Araujo, Daiane da S. A. Castelo Branco, and Irenilza de A. Nääs

An Evaluation of Brazilian Ports for Corn Export Using Multicriteria Analysis 129
Aguinaldo Eduardo de Souza, João José Giardulli Junior, João Gilberto Mendes dos Reis, Ataide Pereira Cardoso Junior, Paula Ferreira da Cruz Correia, Ricardo Zandonadi Schimidt, José Benedito Sacomano, and Márcia Terra da Silva

Port Terminals Assessment: An Empirical Analysis of Requirements of Brazilian National Plan of Port Logistics 135
Aguinaldo Eduardo de Souza, João Gilberto Mendes dos Reis, Ataide Pereira Cardoso Junior, Emerson Rodolfo Abraham, Oduvaldo Vendrametto, Renato Marcio dos Santos, and Roberta Sobral Pinto

Brazilian Coffee Export Network: An Analysis Using SNA 142
Paula F. da Cruz Correia, João Gilberto M. dos Reis, Aguinaldo E. de Souza, and Ataíde Pereira Cardoso Jr.

CNN-Based Growth Prediction of Field Crops for Optimizing Food Supply Chain 148
Shunsuke Iitsuka, Nobutada Fujii, Daisuke Kokuryo, Toshiya Kaihara, and Shinichi Nakano

Asymmetrical Evaluation of Forecasting Models Through Fresh Food Product Characteristics. 155
Flemming M. M. Christensen, Iskra Dukovska-Popovska, Casper S. Bojer, and Kenn Steger-Jensen

Horizontal Integration in Fresh Food Supply Chain 164
Flemming M. M. Christensen, Soujanya Mantravadi, Iskra Dukovska-Popovska, Hans-Henrik Hvolby, Kenn Steger-Jensen, and Charles Møller

Reverse Logistics and Waste in the Textile and Clothing Production Chain in Brazil 173
Solimar Garcia, Irenilza de Alencar Nääs, Pedro Luiz de Oliveira Costa Neto, and João Gilberto Mendes dos Reis

Port Performance Measures in Brazil: An Analysis in Port of Santos 180
Renato Márcio dos Santos, João Gilberto Mendes dos Reis, Júlio Cesar Raymundo, Emerson Rodolfo Abraham, Ataide Pereira Cardoso Junior, and Aguinaldo Eduardo de Souza

CO_2 Gas Emissions of Soybean Production and Transportation in the Different Macro-regions of Mato Grosso State - Brazil 187
Marley Nunes Vituri Toloi, Rodrigo Carlo Toloi, Helton Raimundo Oliveira Silva, João Gilberto Mendes dos Reis, and Silvia Helena Bonilla

Sustainability and Reconfigurability of Manufacturing Systems

Classification of Optical Technologies for the Mapping of Production Environments 197
Marius Greger, Daniel Palm, Louis Louw, and Konrad von Leipzig

A DRC Scheduling for Social Sustainability: Trade-Off Between Tardiness and Workload Balance 206
Muhammad Akbar and Takashi Irohara

Towards Reconfigurable Digitalized and Servitized Manufacturing Systems: Conceptual Framework 214
Xavier Boucher, Audrey Cerqueus, Xavier Delorme, Clemens Gonnermann, Magdalena Paul, Gunther Reinhart, Julia Schulz, and Fabian Sippl

Simulation of Reconfigurable Assembly Cells with Unity3D 223
Magdalena Paul, Daria Leiber, Julian Pleli, and Gunther Reinhart

Decision Support System for Joint Product Design and Reconfiguration of Production Systems 231
S. Ehsan Hashemi-Petroodi, Clemens Gonnermann, Magdalena Paul, Simon Thevenin, Alexandre Dolgui, and Gunther Reinhart

Simple Assembly Line Balancing Problem with Power Peak Minimization 239
Paolo Gianessi, Xavier Delorme, and Oussama Masmoudi

Modular Robot Software Framework for the Intelligent and Flexible Composition of Its Skills 248
Lisa Heuss, Andreas Blank, Sebastian Dengler, Georg Lukas Zikeli, Gunther Reinhart, and Jörg Franke

A Competence-Based Description of Employees in Reconfigurable Manufacturing Systems 257
Svenja Korder, Barbara Tropschuh, and Gunther Reinhart

Product and Asset Life Cycle Management in Smart Factories of Industry 4.0

Identification of the Inspection Specifications for Achieving Zero Defect Manufacturing 267
Foivos Psarommatis and Dimitris Kiritsis

Risk Sources Affecting the Asset Management Decision-Making Process in Manufacturing: A Systematic Review of the Literature 274
Adalberto Polenghi, Irene Roda, Marco Macchi, and Paolo Trucco

Conceptual Framework for a Data Model to Support Asset Management Decision-Making Process 283
Adalberto Polenghi, Irene Roda, Marco Macchi, and Alessandro Pozzetti

Hybrid Approach Using Ontology-Supported Case-Based Reasoning and Machine Learning for Defect Rate Prediction 291
Bongjun Ji, Farhad Ameri, Junhyuk Choi, and Hyunbo Cho

Semantic Model-Driven PLM Data Interoperability: An Application for Aircraft Ground Functional Testing with Eco-Design Criteria 299
D. Arena, M. Oliva, I. Eguia, C. Del Valle, and D. Kiritsis

A Method for Converting Current Data to RDF in the Era of Industry 4.0 . . . 307
Marlène Hildebrand, Ioannis Tourkogiorgis, Foivos Psarommatis, Damiano Arena, and Dimitris Kiritsis

Total Cost of Ownership Driven Methodology for Predictive Maintenance Implementation in Industrial Plants 315
I. Roda, S. Arena, M. Macchi, and P. F. Orrù

Ontology-Based Resource Allocation for Internet of Things 323
Zeinab Nezami, Kamran Zamanifar, Damiano Arena, and Dimitris Kiritsis

Variety and Complexity Management in the Era of Industry 4.0

Bringing Advanced Analytics to Manufacturing: A Systematic Mapping 333
Hergen Wolf, Rafael Lorenz, Mathias Kraus, Stefan Feuerriegel, and Torbjørn H. Netland

Impact of Modeling Production Knowledge for a Data Based Prediction of Transition Times 341
Günther Schuh, Jan-Philipp Prote, Philipp Hünnekes, Frederick Sauermann, and Lukas Stratmann

Reconfigurable Manufacturing: A Classification of Elements Enabling Convertibility and Scalability 349
Alessia Napoleone, Ann-Louise Andersen, Alessandro Pozzetti, and Marco Macchi

Industry 4.0 in SMEs: A Sectorial Analysis 357
Javier Luco, Sara Mestre, Ludovic Henry, Simon Tamayo, and Frederic Fontane

Reconfigurable Manufacturing: A Case-Study of Reconfigurability Potentials in the Manufacturing of Capital Goods 366
Bjørn Christensen, Ann-Louise Andersen, Khaled Medini, and Thomas D. Brunoe

A DSM Clustering Method for Product and Service Modularization 375
Omar Ezzat, Khaled Medini, Maria Stoettrup Schioenning Larsen, Xavier Boucher, Thomas D. Brunoe, Kjeld Nielsen, and Xavier Delorme

Customization and Variants in Terms of Form, Place and Time 383
Joakim Wikner and Fredrik Tiedemann

A Framework for Identification of Complexity Drivers in Manufacturing Companies 392
Rasmus Andersen, Thomas D. Brunoe, and Kjeld Nielsen

Identification of Platform Candidates Through Production System Classification Coding. 400
Daniel G. H. Sorensen, Hoda A. ElMaraghy, Thomas Ditlev Brunoe, and Kjeld Nielsen

5G-Ready in the Industrial IoT-Environment: Requirements and Needs for IoT Applications from an Industrial Perspective. 408
Kay Burow, Marco Franke, and Klaus-Dieter Thoben

Complexity Management in Production Systems: Approach for Supporting Problem Solving Through Holistic Structural Consideration 414
Samuel Horler, Ralph Riedel, and Egon Müller

Participatory Methods for Supporting the Career Choices in Industrial Engineering and Management Education

The Teaching of Engineers Focused on Innovative Entrepreneurship 425
Danielle Miquilim and Marcia Terra da Silva

Research Initiative: Using Games for Better Career Choices 433
Nick B. Szirbik and Vincent R. Velthuizen

Blockchain in Supply Chain Management

Blockchain as Middleware+ 443
David Holtkemper and Günther Schuh

Towards a Blockchain Based Traceability Process: A Case Study from Pharma Industry 451
Ferdinando Chiacchio, Diego D'Urso, Lucio Compagno, Marcello Chiarenza, and Luca Velardita

An Architecture of IoT-Based Product Tracking with Blockchain in Multi-sided B2B Platform 458
Shantanoo Desai, Quan Deng, Stefan Wellsandt, and Klaus-Dieter Thoben

A Blockchain Application Supporting the Manufacturing Value Chain 466
Bjørn Jæger, Terje Bach, and Simen Alexander Pedersen

Design of a Blockchain-Driven System for Product Counterfeiting Restraint in the Supply Chain 474
Sotiris P. Gayialis, Evripidis Kechagias, Georgios A. Papadopoulos, and Grigorios D. Konstantakopoulos

Designing and Delivering Smart Services in the Digital Age

A Dual Perspective Workflow to Improve Data Collection for Maintenance Delivery: An Industrial Case Study 485
Roberto Sala, Fabiana Pirola, Emanuele Dovere, and Sergio Cavalieri

The Impact of Digital Technologies on Services Characteristics: Towards Digital Servitization 493
David Romero, Paolo Gaiardelli, Giuditta Pezzotta, and Sergio Cavalieri

Capability-Based Implementation of Digital Service Innovation in SMEs 502
David Görzig, Susann Kärcher, and Thomas Bauernhansl

Digital Servitization: The Next "Big Thing" in Manufacturing Industries 510
Ugljesa Marjanovic, Slavko Rakic, and Bojan Lalic

Organization of Sales for Smart Product Service Systems 518
Benedikt Moser, Achim Kampker, Philipp Jussen, and Jana Frank

Operations Management in Engineer-to-Order Manufacturing

Exploring Logistics Strategy in Construction 529
Martin Rudberg and Duncan Maxwell

Architecture for Digital Spare-Parts Library: Use of Additive Layer Manufacturing in the Petroleum Industry 537
R. M. Chandima Ratnayake, Arvind Keprate, and Roman Wdowik

IPD Methodology in Shipbuilding 546
Hajnalka Vaagen and Lucky C. Masi

Changing Markets: Implications for the Planning Process in ETO Companies 554
Kristina Kjersem and Marte F. Giskeødegård

Purchasing Strategies, Tactics, and Activities in Engineer-to-Order Manufacturing 562
Mikhail Shlopak, Espen Rød, and Gabriele Hofinger Jünge

Examining Circular Economy Business Models for Engineer-to-Order Products 570
Nina Pereira Kvadsheim, Deodat Mwesiumo, and Jan Emblemsvåg

Digitalized Manufacturing Logistics in Engineer-to-Order Operations. 579
Jo Wessel Strandhagen, Sven-Vegard Buer, Marco Semini, and Erlend Alfnes

Aspects for Better Understanding of Engineering Changes in Shipbuilding Projects: In-Depth Case Study 588
Natalia Iakymenko, Marco Semini, and Jan Ola Strandhagen

Practical Guidelines for Production Planning and Control in HVLV Production 596
Erik Gran and Erlend Alfnes

APS Feasibility in an Engineer to Order Environment 604
Erlend Alfnes and Hans-Henrik Hvolby

The Operator 4.0 and the Internet of Things, Services and People

Empowering and Engaging Solutions for Operator 4.0 – Acceptance and Foreseen Impacts by Factory Workers 615
Eija Kaasinen, Susanna Aromaa, Päivi Heikkilä, and Marja Liinasuo

Task-Technology Fit in Manufacturing: Examining Human-Machine Symbiosis Through a Configurational Approach 624
Patrick Mikalef, Hans Yngvar Torvatn, and Emrah Arica

Augmented Reality for Humans-Robots Interaction in Dynamic Slotting "Chaotic Storage" Smart Warehouses. 633
Peter Papcun, Jan Cabadaj, Erik Kajati, David Romero, Lenka Landryova, Jan Vascak, and Iveta Zolotova

Analyzing Human Robot Collaboration with the Help of 3D Cameras 642
Robert Glöckner, Lars Fischer, Arne Dethlefs, and Hermann Lödding

Investments of the Automotive Sector and the Industry 4.0. Brazilian Case 650
Sergio Miele Ruggero, Nilza Aparecida dos Santos, José Benedito Sacomano, and Marcia Terra da Silva

Process Innovation in Learning Factories: Towards a Reference Model 658
Maria Stoettrup Schioenning Larsen, Astrid Heidemann Lassen, and Kjeld Nielsen

Applicability of Agile Methods for Dynamic Requirements in Smart PSS Development 666
Stefan Wiesner, Jannicke Baalsrud Hauge, Paul Sonntag, and Klaus-Dieter Thoben

Smart Service Engineering: Promising Approaches for a Digitalized Economy 674
Roman Senderek, Jan Kuntz, Volker Stich, and Jana Frank

Strategies for Implementing Collaborative Robot Applications for the Operator 4.0. 682
Åsa Fast-Berglund and David Romero

Situation Awareness for Effective Production Control 690
Andreas D. Landmark, Emrah Arica, Birgit Kløve, Pål Furu Kamsvåg, Eva Amdahl Seim, and Manuel Oliveira

Intelligent Diagnostics and Maintenance Solutions for Smart Manufacturing

A Study on the Diagnostics Method for Plant Equipment Failure 701
Minyoung Seo and Hong-Bae Jun

Detailed Performance Diagnosis Based on Production Timestamps: A Case Study 708
Johannes Cornelis de Man and Felix Mannhardt

Modeling the Maintenance Time Considering the Experience of the Technicians. 716
Hyunjong Shin, Kai-wen Tien, and Vittaldas Prabhu

A Thesaurus-Guided Method for Smart Manufacturing Diagnostics 722
Farhad Ameri and Reid Yoder

Author Index 731

Contents – Part II

Smart Supply Networks

The APMS Conference & IFIP WG5.7 in the 21st Century: A Bibliometric Study 1
Makenzie Keepers, David Romero, and Thorsten Wuest

Price Decision Making in a Centralized/Decentralized Solid Waste Disposal Supply Chain with One Contractor and Two Disposal Facilities 17
Iman Ghalehkhondabi and Reza Maihami

Understanding the Impact of User Behaviours and Scheduling Parameters on the Effectiveness of a Terminal Appointment System Using Discrete Event Simulation 27
Mihai Neagoe, Hans-Henrik Hvolby, Mohammad Sadegh Taskhiri, and Paul Turner

Full-Scale Discrete Event Simulation of an Automated Modular Conveyor System for Warehouse Logistics 35
Alireza Ashrafian, Ole-Gunnar Pettersen, Kristian N. Kuntze, Jacob Franke, Erlend Alfnes, Knut F. Henriksen, and Jakob Spone

Handling Uncertainties in Production Network Design 43
Günther Schuh, Jan-Philipp Prote, Andreas Gützlaff, and Sebastian Henk

Supply Chain Scenarios for Logistics Service Providers in the Context of Additive Spare Parts Manufacturing 51
Daniel Pause and Svenja Marek

Supply Chain Optimization in the Tire Industry: State-of-the-Art 59
Kartika Nur Alfina and R. M. Chandima Ratnayake

Collaborative Exchange of Cargo Truck Loads: Approaches to Reducing Empty Trucks in Logistics Chains 68
Hans-Henrik Hvolby, Kenn Steger-Jensen, Mihai Neagoe, Sven Vestergaard, and Paul Turner

An Integrated Approach for Supply Chain Tactical Planning and Cash Flow Valuation 75
Sabah Belil, Asma Rakiz, and Kawtar Retmi

UAV Set Covering Problem for Emergency Network 84
Youngsoo Park and Ilkyeong Moon

A Stochastic Optimization Model for Commodity Rebalancing Under Traffic Congestion in Disaster Response 91
Xuehong Gao

Optimal Supplier Selection in a Supply Chain with Predetermined Loading/Unloading Time Windows and Logistics Truck Share 100
Alireza Fallahtafti, Iman Ghalehkhondabi, and Gary R. Weckman

Scheduling Auction: A New Manufacturing Business Model for Balancing Customization and Quick Delivery 109
Shota Suginouchi and Hajime Mizuyama

Passenger Transport Disutilities in the US: An Analysis Since 1990s. 118
Helcio Raymundo and João Gilberto M. dos Reis

Sustainability and Production Management

Configuring the Future Norwegian Macroalgae Industry Using Life Cycle Analysis 127
Jon Halfdanarson, Matthias Koesling, Nina Pereira Kvadsheim, Jan Emblemsvåg, and Céline Rebours

Operationalizing Industry 4.0: Understanding Barriers of Industry 4.0 and Circular Economy 135
Lise Lillebrygfjeld Halse and Bjørn Jæger

Business Model Innovation for Eco-Efficiency: An Empirical Study 143
Yan Li and Steve Evans

Atmospheric Water Generation (AWG): Performance Model and Economic Analysis 151
Faraz Moghimi, Hamed Ghoddusi, Bahram Asiabanpour, and Mahdi Behroozikhah

Life Cycle Assessment for Ordinary and Frost-Resistant Concrete. 159
Ramin Sabbagh and Paria Esmatloo

Production Management Theory and Methodology

Simulation Based Optimization of Lot Sizes for Opposing Logistic Objectives 171
Janine Tatjana Maier, Thomas Voß, Jens Heger, and Matthias Schmidt

A Proposal of Order Planning Method with Consideration of Multiple Organizations in Manufacturing System 180
Ken Yamashita, Toshiya Kaihara, Nobutada Fujii, Daisuke Kokuryo, Toyohiro Umeda, and Rihito Izutsu

Reduction of Computational Load in Robust Facility Layout Planning Considering Temporal Production Efficiency 189
Eiji Morinaga, Komei Iwasaki, Hidefumi Wakamatsu, and Eiji Arai

Decision-Making Process for Buffer Dimensioning in Manufacturing. 196
Lisa Hedvall and Joakim Wikner

Postponement Revisited – A Typology for Displacement 204
Fredrik Tiedemann and Joakim Wikner

Efficient Heuristic Solution Methodologies for Scheduling Batch Processor with Incompatible Job-Families, Non-identical Job-Sizes and Non-identical Job-Dimensions 212
M. Mathirajan and M. Ramasubramanian

Optimizing Workflow in Cell-Based Slaughtering and Cutting of Pigs. 223
Johan Oppen

Increasing the Regulability of Production Planning and Control Systems 231
Günther Schuh and Philipp Wetzchewald

Possibilities and Benefits of Using Material Flow Information to Improve the Internal Hospital Supply Chain 240
Giuseppe Ismael Fragapane, Aili Biriita Bertnum, and Jan Ola Strandhagen

Medical Supplies to the Point-Of-Use in Hospitals 248
Giuseppe Ismael Fragapane, Aili Biriita Bertnum, Hans-Henrik Hvolby, and Jan Ola Strandhagen

Combining the Inventory Control Policy with Pricing and Advertisement Decisions for a Non-instantaneous Deteriorating Product 256
Reza Maihami and Iman Ghalehkhondabi

Assessing Fit of Capacity Planning Methods for Delivery Date Setting: An ETO Case Study 265
Swapnil Bhalla, Erlend Alfnes, and Hans-Henrik Hvolby

Data-Driven Production Management

From a Theory of Production to Data-Based Business Models 277
Günther Schuh, Malte Brettel, Jan-Philipp Prote, Andreas Gützlaff, Frederick Sauermann, Katharina Thomas, and Mario Piel

Real-Time Data Sharing in Production Logistics: Exploring Use Cases by an Industrial Study 285
Masoud Zafarzadeh, Jannicke Baalsrud Hauge, Magnus Wiktorsson, Ida Hedman, and Jasmin Bahtijarevic

Scenarios for the Development and Use of Data Products Within the Value Chain of the Industrial Food Production 294
Volker Stich, Lennard Holst, Philipp Jussen, and Dennis Schiemann

Bidirectional Data Management in Factory Planning and Operation 303
Uwe Dombrowski, Jonas Wullbrandt, and Alexander Karl

Open Access Digital Tools' Application Potential in Technological Process Planning: SMMEs Perspective 312
Roman Wdowik and R. M. Chandima Ratnayake

Industry 4.0 Implementations

Implementation of Industry 4.0 in Germany, Brazil and Portugal: Barriers and Benefits 323
Walter C. Satyro, Mauro de Mesquita Spinola, Jose B. Sacomano, Márcia Terra da Silva, Rodrigo Franco Gonçalves, Marcelo Schneck de Paula Pessoa, Jose Celso Contador, Jose Luiz Contador, and Luciano Schiavo

Planning Guideline and Maturity Model for Intra-logistics 4.0 in SME 331
Knut Krowas and Ralph Riedel

Self-assessment of Industry 4.0 Technologies in Intralogistics for SME's 339
Martina Schiffer, Hans-Hermann Wiendahl, and Benedikt Saretz

Industry 4.0 Visions and Reality- Status in Norway 347
Hans Torvatn, Pål Kamsvåg, and Birgit Kløve

Exploring the Impact of Industry 4.0 Concepts on Energy and Environmental Management Systems: Evidence from Serbian Manufacturing Companies 355
Milovan Medojevic, Nenad Medic, Ugljesa Marjanovic, Bojan Lalic, and Vidosav Majstorovic

Smart Factory and IIOT

Virtualization of Sea Trials for Smart Prototype Testing 365
Moritz von Stietencron, Shantanoo Desai, and Klaus-Dieter Thoben

IoH Technologies into Indoor Manufacturing Sites 372
Takeshi Kurata, Takashi Maehata, Hidehiko Hashimoto, Naohiro Tada, Ryosuke Ichikari, Hideki Aso, and Yoshinori Ito

3D Visualization System of Manufacturing Big Data and Simulation Results of Production for an Automotive Parts Supplier 381
Dahye Hwang and Sang Do Noh

Cyber-Physical Systems

Blockchain as an Internet of Services Application for an Advanced Manufacturing Environment 389
Benedito Cristiano A. Petroni, Jacqueline Zonichenn Reis, and Rodrigo Franco Gonçalves

Development of a Modeling Architecture Incorporating the Industry 4.0 View for a Company in the Gas Sector 397
Nikolaos A. Panayiotou, Konstantinos E. Stergiou, and Vasileios P. Stavrou

Process for Enhancing the Production System Robustness with Sensor Data – a Food Manufacturer Case Study 405
Sofie Bech, Thomas Ditlev Brunoe, and Kjeld Nielsen

In-Process Noise Detection System for Product Inspection by Using Acoustic Data 413
Woonsang Baek and Duck Young Kim

Knowledge Management in Design and Manufacturing

Closed-Loop Manufacturing for Aerospace Industry: An Integrated PLM-MOM Solution to Support the Wing Box Assembly Process 423
Melissa Demartini, Federico Galluccio, Paolo Mattis, Islam Abusohyon, Raffaello Lepratti, and Flavio Tonelli

Modeling Manual Assembly System to Derive Best Practice from Actual Data 431
Susann Kärcher, David Görzig, and Thomas Bauernhansl

Application of a Controlled Assembly Vocabulary: Modeling a Home Appliance Transfer Line 439
Chase Wentzky, Chelsea Spence, Apurva Patel, Nicole Zero, Adarsh Jeyes, Alexis Fiore, Joshua D. Summers, Mary E. Kurz, and Kevin M. Taaffe

What Product Developers Really Need to Know - Capturing the Major Design Elements 447
Bjørnar Henriksen, Andreas Landmark, and Carl Christian Røstad

Collaborative Product Development

Design-for-Cost – An Approach for Distributed Manufacturing Cost Estimation 457
Minchul Lee and Boonserm (Serm) Kulvatunyou

Computer-Aided Selection of Participatory Design Methods 466
Michael Bojko, Ralph Riedel, and Mandy Tawalbeh

Knowledge Management Environment for Collaborative Design in Product Development. 475
Shuai Zhang

A Multi-criteria Approach to Collaborative Product-Service Systems Design 481
Martha Orellano, Khaled Medini, Christine Lambey-Checchin, Maria-Franca Norese, and Gilles Neubert

ICT for Collaborative Manufacturing

MES Implementation: Critical Success Factors and Organizational Readiness Model. 493
Daniela Invernizzi, Paolo Gaiardelli, Emrah Arica, and Daryl Powell

Identifying the Role of Manufacturing Execution Systems in the IS Landscape: A Convergence of Multiple Types of Application Functionalities 502
S. Waschull, J. C. Wortmann, and J. A. C. Bokhorst

A Generic Approach to Model and Analyze Industrial Search Processes 511
Philipp Steenwerth and Hermann Lödding

A Methodology to Assess the Skills for an Industry 4.0 Factory 520
Federica Acerbi, Silvia Assiani, and Marco Taisch

Collaborative Technology

A Theoretical Approach for Detecting and Anticipating Collaboration Opportunities 531
Ibrahim Koura, Frederick Benaben, and Juanqiong Gou

The Systematic Integration of Stakeholders into Factory Planning, Construction, and Factory Operations to Increase Acceptance and Prevent Disruptions 539
Uwe Dombrowski, Alexander Karl, Colette Vogeler, and Nils Bandelow

Service Engineering Models: History and Present-Day Requirements 547
Roman Senderek, Jan Kuntz, Volker Stich, and Jana Frank

Design and Simulation of an Integrated Model for Organisational Sustainability Applying the Viable System Model and System Dynamics 555
Sergio Gallego-García and Manuel García-García

Applications of Machine Learning in Production Management

Enabling Energy Efficiency in Manufacturing Environments Through Deep Learning Approaches: Lessons Learned 567
M. T. Alvela Nieto, E. G. Nabati, D. Bode, M. A. Redecker, A. Decker, and K.-D. Thoben

Retail Promotion Forecasting: A Comparison of Modern Approaches 575
Casper Solheim Bojer, Iskra Dukovska-Popovska, Flemming Max Møller Christensen, and Kenn Steger-Jensen

A Data Mining Approach to Support Capacity Planning for the Regeneration of Complex Capital Goods 583
Melissa Seitz, Maren Sobotta, and Peter Nyhuis

Developing Smart Supply Chain Management Systems Using Google Trend's Search Data: A Case Study. 591
Ramin Sabbagh and Dragan Djurdjanovic

Collaborative Technology

Managing Knowledge in Manufacturing Industry - University Innovation Projects 603
Irina-Emily Hansen, Ola Jon Mork, and Torgeir Welo

Technology Companies in Judicial Reorganization 611
Ricardo Zandonadi Schmidt and Márcia Terra da Silva

Multiscale Modeling of Social Systems: Scale Bridging via Decision Making 617
Nursultan Nikhanbayev, Toshiya Kaihara, Nobutada Fujii, and Daisuke Kokuryo

e-Health: A Framework Proposal for Interoperability and Health Data Sharing. A Brazilian Case 625
Neusa Andrade, Pedro Luiz de Oliveira Costa Neto, Jair Gustavo de Mello Torres, Irapuan Glória Júnior, Cláudio Guimarães Scheidt, and Welleson Gazel

Managing Risk and Opportunities in Complex Projects 631
Asbjørn Rolstadås, Agnar Johansen, Yvonne C. Bjerke, and Tobias O. Malvik

Author Index 641