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Leading scholars in Production Research for the 55th volume anniversary of IJPR

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Editorial

Leading Scholars in Production Research for the 55th Volume Anniversary of IJPR

Alexandre Dolgui, Editor-in-Chief of IJPR

In 2017, we have published the 55th volume of the *International Journal of Production Research*. To celebrate this anniversary, we decided to prepare a special double issue with papers by *leading scholars in Production Research*. The list of papers presented in this issue is reported in Table 1. The names of invited authors are in the first column in the alphabetical order. I am very happy, because the most distinguished colleagues in our domain have positively responded and submitted outstanding papers to this special issue. Initially we planned to publish 55 papers, but taking into account the enthusiasm and extremely encouraging reaction of colleagues, we have decided to increase the number to 57 articles. All papers were reviewed by at least 3 referees and were accepted after at least a revision.

IJPR was founded in 1961 and is one of the oldest journals publishing research on decision-making in product/process design, production engineering, operations management and logistics. IJPR was the first European based manufacturing journal publishing papers seven years after *Management Science* (founded in 1954). Along with other well established journals, for example *European Journal of Operational Research* (founded in 1977) and *International Journal of Production Economics* (originally founded in 1976), IJPR is one of most recognized journals published in Europe, presenting high quality international research on production systems and logistics.

T. Fry and J. Donohue, The University of South Carolina, USA, in their paper (Fry and Donohue, 2013), have analyzed 15 most known journal ranking studies of 147 most known journals and developed a DEA model. Based on this model, they have ranked 32 best OM journals with IJPR ranked 4th after *Management Science*, *Journal of Operations Management* and *Operations Research*.

In contrast with the most of OM and OR/MS journals, IJPR offers an overall vision of problems, techniques, and applications in production systems: from product design, manufacturing system engineering to production systems and supply network optimization. Moreover, as it is often stated the reputation of IJPR is based on strong relationship to industrial applications (Dolgui, 2012). The main criteria for selection papers considered for publication in IJPR are scientific rigor and practical relevance.

Table 1. Papers by Leading Scholars in Production Research for the 55th Volume Anniversary

Invited authors	University	Coauthors	Paper title
Henk Akkermans	Tilburg University, The Netherlands	Luk N. Van Wassenhove	A dynamic model of managerial response to grey swan events in supply networks
Ronald Askin	Arizona State University, USA	Girish Jampani Hanumantha	Queueing network models for analysis of nonstationary manufacturing systems
Jennifer Blackhurst	University of Iowa, USA	Kevin P. Scheibe	Supply chain disruption propagation: A systemic risk and normal accident theory perspective

Nils Boysen	Friedrich-Schiller-Universität Jena, Germany	Joachim Scholl, David Boywitz	On the quality of simple measures predicting block relocations in container yards
T.C.E. Cheng	The Hong Kong Polytechnic University, Hong Kong	Yongli Wang, Juliang Zhang, Guowei Hua	The value of quick response: Selling to strategic consumers with risk preference and decreasing valuation
George Chryssolouris	University of Patras, Greece	Demetris Petrides, Alexios Papacharalampopoulos, Panagiotis Stavropoulos	Dematerialization of products and manufacturing-generated knowledge content: Relationship through paradigms
Mark S. Daskin	University of Michigan, USA	Emily L. Tucker	The tradeoff between the median and range of assigned demand in facility location models
René B.M. de Koster	Erasmus University, The Netherlands	Nynke Faber, Ale Smidts	Survival of the fittest: The impact of fit between warehouse management structure and warehouse context on warehouse performance
Hoda ElMaraghy	University of Windsor, Canada	Javad Navaei	Optimal operations sequence retrieval from master operations sequence for part/product families
Barbara B. Flynn; Steven A. Melnyk	Indiana University, USA, and Fundacao Getulio Vargas, Brazil; University of Newcastle, Australia, and Michigan State University, USA	Amrou Awaysheh	The best of times and the worst of times: Empirical operations and supply chain management research
Mitsuo Gen	Tokyo University of Science, Japan	Lin Lin	Hybrid evolutionary optimization with learning for production scheduling: State-of-the-art survey on algorithms and applications
Stanley B. Gershwin	Massachusetts Institute of Technology, USA		The future of manufacturing systems engineering
Joseph Geunes	University of Arkansas, USA		Revisiting the two-stage EOQ/EPQ model with inelastic demand: Decentralization and coordination
Boaz Golany	Israel Institute of Technology, Haifa, Israel	Yael Deutsch	A parcel locker network as a solution to the logistics last mile problem
Michael F. Gorman	University of Dayton, USA	Daniel G. Conway	A tutorial of integrating duality and Branch and Bound in earliness-tardiness scheduling with idle insertion time problems
Kannan Govindan	University of Southern Denmark, Denmark	Mia Hasanagic	Systematic review of drivers, barriers and practices towards circular economy- A supply chain perspective
Suresh Goyal	Concordia University, Canada	Jasneet Kaur, Ramneet Sidhu, Anjali Awasthi, Satyaveer Chauhan	A DEMATEL based approach for investigating barriers in green supply chain management in Canadian manufacturing firms
Stephen C. Graves	Massachusetts Institute of Technology, USA	Rong Yuan, Tolga Cezik	Stowage decisions in multi-zone storage systems
Robert W. Grubbström	Linköping Institute of Technology, Sweden		Risk preference evaluation - A fourth dimension of the application of the Laplace transform
V. Daniel R. Guide, Jr.	Pennsylvania State University, USA	James D. Abbey	A typology of remanufacturing in closed-loop supply chains
Angappa Gunasekaran	California State University – Bakersfield, USA	Yahaya Y. Yusuf, Ezekiel O. Adeleye, Thanos Papadopoulos	Agile manufacturing practices: The role of big data and business analytics with multiple case studies
Wallace J. Hopp	University of Michigan, Ann Arbor, USA		Positive Lean: Merging the science of efficiency with the psychology of work
Dmitry Ivanov	Berlin School of Economics and Law, Germany	Alexandre Dolgui, Boris Sokolov	Ripple effect in the supply chain: An analysis and recent literature
S. C. Lenny Koh	The University of Sheffield, UK	Victor Shiguang, James Baldwin, Thomas Y. Choi	Fragmented institutional fields and their impact on manufacturing environmental practices
Ton G. de Kok	Eindhoven University of Technology, The Netherlands		Modelling short-term manufacturing flexibility by human intervention and its impact on performance

Rainer Kolisch	Technical University of Munich, Germany	Philipp Melchior, Roel Leus, Stefan Creemers	Dynamic order acceptance and capacity planning in a stochastic multi-project environment with a bottleneck resource
Yoram Koren	University of Michigan, Ann Arbor, USA	Xi Gu, Weihong Guo	Choosing the system configuration for high-volume manufacturing
Panos Kouvelis	Washington University in Saint Louis, Missouri, USA	Xingxing Chen, Maryam Biazaran	Value of operational flexibility in co-production systems with yield and demand uncertainty
Andrew Kusiak	University of Iowa, USA		Smart manufacturing
Gilbert Laporte	HEC Montréal, Canada	Oliver Thomasson, Maria Battarra, Gunes Erdogan	Scheduling twin robots in a palletising problem
Andrea Matta	Politecnico di Milano, Italy	Giulia Pedrielli, Arianna Aleri, Mengyi Zhang	Design and control of manufacturing systems: A discrete event optimization methodology
Michel Minoux	UPMC – Sorbonne Universités, France		Robust and stochastic multistage optimization under Markovian uncertainty with applications to production/inventory problems
Arturo Molina	Tecnologico de Monterrey, Mexico	Dante Chavarría-Barrientos, Rafael Batres, Paul K. Wright	A Methodology to create the sensing, smart and sustainable manufacturing enterprise
A.Y.C. Nee	National University of Singapore, Singapore	X. Wang, S.K. Ong	A comprehensive survey of ubiquitous manufacturing research
George Nemhauser	Georgia Institute of Technology, USA	Matias Siebert, Kelly Bartlett, Haejoong Kim, Shabbir Ahmed, Junho Lee, Dima Nazzal, Joel Sokol	Lot targeting and lot dispatching decision policies for semiconductor manufacturing: Optimization under uncertainty with simulation validation
Stephen T. Newman	University of Bath, UK	Reza Imani Asrai, Aydin Nassehi	A mechanistic model of energy consumption in milling
E. W. T. Ngai	Hong Kong Polytechnic University, Hong Kong SAR, China	Chuck C. H. Law, Carlos W. H. Lo, J. K. L. Poon, Shanshan Peng	Business sustainability and corporate social responsibility: Case studies of three gas operators in China
Shimon Y. Nof	Purdue University, USA	Mohsen Moghaddam	Collaborative service-component integration in cloud manufacturing
Jan Olhager	Lund University, Sweden	Andreas Feldmann	Distribution of manufacturing strategy decision-making in multiplant networks
José Fernando Oliveira	Universidade do Porto, Portugal	Leandro R. Mundim, Marina Andretta, Maria Antonia Carravilla	A general heuristic for two-dimensional nesting problems with limited-size containers
David L. Olson	University of Nebraska – Lincoln, USA		View of IJPR contributions to knowledge management in supply chains
Joseph Sarkis	Worcester Polytechnic Institute, USA	Qingyun Zhu	Environmental sustainability and production: Taking the road less traveled
Tadeusz Sawik	AGH University of Science & Technology, Poland		Selection of a dynamic supply portfolio under delay and disruption risks
Suresh P. Sethi	University of Texas at Dallas, USA	Haihong Yu, Xi Shan	Creative delinquency or destructive selfishness?
Leyuan Shi	University of Wisconsin–Madison, USA	Zhongshun Shi, Zewen Huang	Customer order scheduling on batch processing machines with incompatible job families
David Simchi-Levi	Massachusetts Institute of Technology, USA	Michelle Xiao Wu	Powering retailers' digitization through analytics and automation
Chelliah Sriskandarajah	Texas A&M University, USA	Bala Shetty	A review of recent theoretical development in scheduling dual-gripper robotic cells
Kathryn E. Stecke	University of Texas at Dallas, USA	Yong Yin, Dongni Li	The evolution of production systems from Industry 2.0 through Industry 4.0

Srinivas Talluri	Michigan State University, USA	Jiho Yoon, Claudia Rosales	Inter-firm partnerships – strategic alliances in the pharmaceutical industry
Christopher S. Tang	University of California, USA	ManMohan S. Sodhi	Corporate social sustainability in supply chains: A thematic analysis of the literature
Manoj Kumar Tiwari	Indian Institute of Technology-Kharagpur, India	Alexandre Dolgui, Yerasani Sinjana, Sri Krishna Kumar, Young Jun Son	Optimizing integrated inventory policy for perishable items in a multi-stage supply chain
Tullio Tolio	Politecnico di Milano, Italy	Andrea Ratti	Performance evaluation of two-machine lines with generalized thresholds
Stephan Vachon	Western University, Canada	Kelsey M. Taylor	Empirical research on sustainable supply chains: IJPR's contribution and research avenues
Luk N. Van Wassenhove	INSEAD, France	Patricia van Loon, Charles Delagarde	The role of second-hand markets in circular business: a simple model for leasing versus selling consumer products
Agostino Villa	Politecnico di Torino, Italy	Teresa Taurino	From industrial districts to SME collaboration frames
Nukala Viswanadham	Indian Institute of Science, India		Performance analysis and design of competitive business models
Xun Xu	University of Auckland, New Zealand	Changyi Deng, Ruifeng Guo, Chao Liu, Ray Y. Zhong	Data cleansing for energy-saving: A case of cyber-physical machine tools health monitoring system

The article “*A dynamic model of managerial response to grey swan events in supply networks*” by **Henk Akkermans** and **Luk N. Van Wassenhove** opens this issue. It deals with so-called grey swan events that can inflict massive damage on production and logistics. Contrarily to black swans, grey swans are not completely unpredictable. The authors present a dynamic model to prevent such events. An empirical investigation concerning the Airbus A380 introduction illustrates this study.

Ron Askin with **Girish Jampani Hanumantha** publish paper “*Queueing network models for analysis of nonstationary manufacturing systems*”. The authors suggest new queueing network models of manufacturing system taking into account dynamic demand and time-dependent resource availability. Numerical validation of the models is given on realistic flow-shop and job-shop instances.

The next paper by **Kevin P. Scheibe** and **Jennifer Blackhurst** “*Supply chain disruption propagation: A systemic risk and normal accident theory perspective*” propose a qualitative case study approach to understand better supply chain disruption propagation phenomena and to provide theoretical insights into this challenging research and application domain.

Joachim Scholl, **David Boywitz** and **Nils Boysen** contributed to this issue with the article “*On the quality of simple measures predicting block relocations in container yards*” which deals with the problem how to minimize the number of unproductive moves in a container yard where it is necessary to remove blocking containers to other stacks when retrieving a given sequence of containers.

The article “*Value of quick response: Selling to strategic consumers with risk preference and decreasing valuation*” by **Yongli Wang**, **Juliang Zhang**, **T.C.E. Cheng**, **Guowei Hua** studies interesting pricing issues under risks. They are very important in the modern market, especially for e-commerce. Quick response strategy is analyzed; some major theoretical results and optimal pricing policies are obtained.

Demetris Petrides, Alexios Papacharalampopoulos, Panagiotis Stavropoulos and George Chryssolouris in the paper *“Dematerialization of products and manufacturing-generated knowledge content: Relationship through paradigms”* have as an objective to analyze the trends of dematerialization and to identify some relationships between the material and knowledge content of products. The question was if the increase in the knowledge substance leads to dematerialization.

Mark S. Daskin and Emily L. Tucker in *“The tradeoff between the median and range of assigned demand in facility location models”* extend the classic p-median facility location model to explore the tradeoff between the average distance to a customer and the range in demand assigned to the facilities. They show that significant reductions in the range in assigned demand can be achieved with only small increases in the average distance to customers. In addition to an integer programming formulation, they present a genetic algorithm and numerical tests on real life datasets.

The article *“Survival of the fittest: The impact of fit between warehouse management structure and warehouse context on warehouse performance”* by **Nynke Faber, René B. M. de Koster** and **Ale Smidts** presents a Data Envelopment Analysis (DEA) model. The model is developed and tested on data of 111 distribution warehouses in the Netherlands and Belgium. The paper gives very interesting conclusions on warehouse management structures and the necessity to adapt them to the context in which the warehouse operates.

“Operations sequence retrieval from master operations sequence for part/product families” by **Javad Navaei** and **Hoda ElMaraghy** provides a very efficient MIP model to generate a Master operations sequence which is used to obtain optimal operations sequence for new variants of products by capitalizing on commonality between product family members. The performance of the model is tested on two assembly and fabrication case studies.

In their article *“The best of times and the worst of times: Empirical operations and supply chain management research”*, **Steven A. Melnyk, Barbara B. Flynn** and **Amrou Awaysheh** present a very interesting analysis of the current state of empirical research in operations and supply chain management and new opportunities in the era of digital economy, Industry 4.0, social media, 3D printing, etc.

Lin Lin and **Mitsuo Gen** in *“Hybrid evolutionary optimization with learning for production scheduling: State-of-the-art survey on algorithms and applications”* give a survey of hybrid evolutionary algorithms to solve scheduling problems in manufacturing environment. A classification of scheduling problems is also reported and corresponding hybrid techniques, especially based on machine learning, which are used to improve the evolutionary algorithms, are analyzed. Real life applications in industry are presented.

Stanley B. Gershwin in the article *“The future of manufacturing systems engineering”* points out the role of decision-maker intuition. He discusses the danger of using generic decision-making software without intuition. With clear practical examples the author shows how analytical models can help develop such intuition and suggests continuing to develop and use analytical models in industrial practice.

The article *“Revisiting the two-stage EOQ/EPQ model with inelastic demand: Decentralization and coordination”* by **Joseph Geunes** analyses the impact of Goyal's seminal paper *“An integrated inventory model for a single supplier-single customer problem”* published in IJPR 40 years ago in 1977 and cited more than 480 times. Some new research questions concerning today's conditions of application of the model and its possible extensions are suggested.

Yael Deutsch and **Boaz Golany** in their paper *“A parcel locker network as a solution to the logistics last mile problem”* offer an innovative approach to eliminate the most expensive segment in distribution chains (known as the "last mile problem") through a network of parcel lockers where parcels are dropped off and end-customers pick them up at their own convenience. The authors model the design of the network (no. of sites, location and size of each site) and solve it as an uncapacitated facility location problem.

Michael F. Gorman and **Daniel G. Conway** in their paper *“A tutorial of integrating duality and Branch and Bound in earliness-tardiness scheduling with idle insertion time problems”* present a new way to improve Branch & Bound algorithms for single-machine scheduling problems. It is based on the use of dual information to reduce the search space and to increase the efficiency of Branch & Bound improvements to given heuristic solutions.

The paper *“Systematic review of drivers, barriers and practices towards circular economy - A supply chain perspective”* by **Kannan Govindan** and **Mia Hasanagic** deals with the concept of circular economy as an opportunity to optimize and promote sustainable production and consumption. A survey of recent results is presented and perspectives for further research are given.

Jasneet Kaur, **Ramneet Sidhu**, **Anjali Awasthi**, **Satyaveer Chauhan** and **Suresh Goyal** in their paper *“A DEMATEL based approach for investigating barriers in green supply chain management in Canadian manufacturing firms”* analyze seven Canadian manufacturing firms from electronic goods sector with DEMATEL method to understand the existing barriers in development of green supply chains in Canada.

The article *“Stowage decisions in multi-zone storage systems”* by **Rong Yuan**, **Tolga Cezik** and **Stephen C. Graves**, deals with zone-stowage decisions determining how products are distributed in a large warehouse. Each zone has limited storage capacity. The demand is uncertain. A simulation study is reported.

Robert W. Grubbström in *“Risk preference evaluation - A fourth dimension of the application of the Laplace transform”* demonstrates new applications of Laplace transform to risk preference theory. Basic examples of application are introduced followed by applications to Portfolio theory and Option pricing.

V. Daniel R. Guide and **James D. Abbey** in the paper *“A typology of remanufacturing in closed-loop supply chains”* provide recent information on the current state of the remanufacturing industry: an overview of the remanufacturing activities in closed loop supply chains is presented; a typology of remanufacturing processes is given.

The article *“Agile manufacturing practices: The role of big data and business analytics with multiple case studies”* by **Angappa Gunasekaran, Yahaya Y. Yusuf, Ezekiel O. Adeleye,** and **Thanos Papadopoulos,** proposes a pioneer study on big data and business analytics for agile manufacturing systems. The research deals with challenges that are related to the deployment of big data techniques within operations and supply chains to enhance the level of agile manufacturing practices under market turbulences.

Wallace J. Hopp in the paper *“Positive Lean: Merging the science of efficiency with the psychology of work”* shows how Lean concepts can be improved to avoid their deleterious impacts on the workforce and to enhance both production efficiency and workforce satisfaction.

The article *“Ripple effect in the supply chain: An analysis and recent literature”* by **Alexandre Dolgui, Dmitry Ivanov,** and **Boris Sokolov,** presents the impacts of disruption propagations on supply chain performances, i.e. ripple or domino effect. The ripple effect is compared to the bullwhip effect. Recent quantitative literature on the ripple effect is analyzed. Mitigation strategies for the ripple effect in the supply chain and a ripple effect control framework that includes redundancy, flexibility, and resilience analysis are reported.

Victor Shiguang, James Baldwin, S. C. Lenny Koh, and **Thomas Y. Choi** in the paper *“Fragmented institutional fields and their impact on manufacturing environmental practices”* analyze the effect of institutional pressures on the manufacturing environmental practices. In this empirical study based on structural equation modeling, the authors show that different kinds of manufacturing environmental practices respond in their own way to pressures from an institutional field.

Ton G. de Kok in the article *“Modelling short-term manufacturing flexibility by human intervention and its impact on performance”* proposes a new modelling approach that drastically reduces model complexity while preserving its validity. The suggested approach is illustrated with a model for re-planning of replenishment orders for production lines with high set-up times and dynamic demand.

The paper *“Dynamic order acceptance and capacity planning in a stochastic multi-project environment with a bottleneck resource”* by **Philipp Melchior, Roel Leus, Stefan Creemers,** and **Rainer Kolisch,** proposes a model based on a continuous-time Markov decision process for both order acceptance and capacity planning in a multi-project dynamic environment. The structure of optimal policies is characterized.

Yoram Koren, Xi Gu, and **Weihong Guo** in their paper *“Choosing the system configuration for high-volume manufacturing”* compare different types of manufacturing systems from cost, responsiveness, and product quality perspectives and offer managerial insights for selecting the best system configuration.

“Value of operational flexibility in co-production systems with yield and demand uncertainty” by **Xingxing Chen, Panos Kouvelis** and **Maryam Biazaran,** studies co-production systems with random yield and demand. The quality requirements for different outputs are different. It is possible to upgrade the quality of outputs in order to meet market demands. By using a

model for two products and two markets, the authors characterize the optimal decisions and demonstrate that the quality upgrading policy is of a single-threshold type.

Andrew Kusiak in the paper *“Smart manufacturing”* analyzes the origin, current status, and the future developments in smart manufacturing. The author presents the smart manufacturing from the six following points of view: manufacturing technology and processes, materials, data, predictive engineering, sustainability, and resource sharing and networking.

Oliver Thomasson, Maria Battarra, Gunes Erdogan, and Gilbert Laporte in the paper *“Scheduling twin robots in a palletising problem”*, introduce a new problem of makespan minimization for scheduling and routing of two robots to pick up and deliver products along a rail. A proof of complexity is given. Two mixed integer linear programming models and a genetic algorithm are developed. Numerical tests are presented.

Giulia Pedrielli, Andrea Matta, Arianna Alfieri, and Mengyi Zhang in the article *“Design and control of manufacturing systems: A discrete event optimization methodology”* propose a methodology to develop integrated models for both simulation and optimization. It uses mathematical programming to model queueing systems. The methodology is illustrated on an example of buffer allocation problem in a production line.

Michel Minoux in the paper *“Robust and stochastic multistage optimization under Markovian uncertainty with applications to production/inventory problems”* investigates both robust and stochastic multistage optimization models when markovian uncertainty is assumed. An in-depth analysis of how to construct compact state-space representations of uncertainty sets for discrete markovian processes is proposed. Extensive computational experiments aimed at comparing (depending on the chosen risk level) the stochastic and robust programming approaches are presented and discussed.

Dante Chavarría-Barrientos, Rafael Batres, Paul K. Wright, and Arturo Molina in their paper *“A methodology to create the sensing, smart and sustainable manufacturing enterprise”* present new concepts of a sensing, smart and sustainable manufacturing enterprise and suggest a new methodology to create such enterprises. The methodology is based on the best practices and techniques from the enterprise modeling domain and on enterprise architectures.

X. Wang, S. K. Ong, A. Y. C. Nee in their paper *“A comprehensive survey of ubiquitous manufacturing research”* present a comprehensive and critical review of the state-of-the-art on ubiquitous manufacturing with an overview of the technical features, characteristics and applications.

Matias Siebert, Kelly Bartlett, Haejoong Kim, Shabbir Ahmed, Junho Lee, Dima Nazzal, George Nemhauser and Joel Sokol in the paper *“Lot targeting and lot dispatching decision policies for semiconductor manufacturing: Optimization under uncertainty with simulation validation”* present a novel approach for semiconductor manufacturing scheduling based on global information instead of local one as in the existing techniques. Two phase policies are applied which take into account travel times and dynamic evolution of the overall process.

Simulations results demonstrate that the proposed dispatching approach leads to a better throughput and machine utilization.

The article "*A mechanistic model of energy consumption in milling*" by **Reza Imani Asrai**, **Stephen T. Newman** and **Aydin Nassehi**, proposes a model which can substantially reduce energy consumption in milling processes and, as a consequence, leads to massive cost savings and reduction of environmental impacts.

E. W. T. Ngai, **Chuck C. H. Law**, **Carlos W. H. Lo**, **J. K. L. Poon**, and **Shanshan Peng** in the article "*Business sustainability and corporate social responsibility: Case studies of three gas operators in China*" analyze the corporate social responsibility (CSR) actions of gas companies in China and the results of these actions. A conceptual framework and survey of literature on CSR are also presented.

Mohsen Moghaddam and **Shimon Y. Nof** in "*Collaborative service-component integration in cloud manufacturing*" develop a framework for dynamic integration of manufacturing services and components in a collaborative cloud manufacturing network taking into account industrial Internet technologies and growing demand for personalized products and services.

The article "*Distribution of manufacturing strategy decision-making in multiplant networks*" by **Jan Olhager** and **Andreas Feldmann** identifies three possible structures of decision making by analyzing data from 107 manufacturing plants: centralized at the network headquarter, decentralized to the plant, and integrated between central headquarters and the plant. The authors show that the selection of a right decision-making structure for a product and process mix leads to an improved operational performance.

In the paper "*A general heuristic for two-dimensional nesting problems with limited-size containers*", **Leandro R. Mundim**, **Marina Andretta**, **Maria Antonia Carravilla** and **José Fernando Oliveira** propose a new generic heuristic for all 2D nesting problems as for example the cutting of irregularly shaped pieces so that either the waste is minimized or the value of the pieces actually cut from the containers is maximized. Numerical tests and new benchmarks are also presented.

David L. Olson gives a "*View of IJPR contributions to knowledge management in supply chains*". Publications since 2006 are analyzed. Two main groups are detected: knowledge management into information systems and quantitative analysis. Both are considered from the points of views of sustainability, multiple criteria decision making, and supply chain availability.

Joseph Sarkis and **Qingyun Zhu** in the paper "*Environmental sustainability and production: Taking the road less traveled*" analyze the contributions of IJPR to environmental sustainability approaches in production and operations management. A survey of the recent publications is provided. Perspectives for research in the domain as well as new research topics and influences are introduced.

The article "*Selection of a dynamic supply portfolio under delay and disruption risks*" by **Tadeusz Sawik**, considers a problem of supplier selection and order quantity allocation in the

presence of disruption and delay risks. A stochastic programming approach is proposed to optimize risk-neutral or risk-averse dynamic portfolio. The criteria are minimizing expected cost or conditional cost-at-risk, maximizing expected service level or conditional service-at-risk.

Haihong Yu, Suresh P. Sethi and Xi Shan, in their article "*Creative delinquency or destructive selfishness?*" answer the questions of why firms do not follow rules, to what extent they disobey, and what are the consequences of such behavior. A Cournot-Nash game model is proposed and analyzed.

The paper "*Customer order scheduling on batch processing machines with incompatible job families*" by **Zhongshun Shi, Zewen Huang and Leyuan Shi**, deals with order scheduling problems for single and parallel batch machines. Each order is composed of jobs from different job families. The number of jobs from each family is given. There are incompatibilities between some job families. Each machine can perform a group of compatible jobs simultaneously. The goal is to schedule orders to minimize makespan and total weighted order completion time.

In the paper "*Powering retailers' digitization through analytics and automation*", **David Simchi-Levi and Michelle Xiao Wu** discuss pricing theory and show three major changes in the domain: availability of data in real time; advances in machine learning and data mining techniques; increased computing speed allowing real-time optimization of prices. The authors show how these new tendencies were exploited by the flash sales retailer Rue La La, the online market maker Groupon and the online retailer B2W Digital.

Chelliah Sriskandarajah and Bala Shetty, in the paper "*A review of recent theoretical development in scheduling dual-gripper robotic cells*", propose a survey of the literature on recent theoretical developments in the scheduling for throughput optimization in robotic cells with a dual-gripper robot. Cyclic sequences of robot moves that minimize the long-run average time to manufacture a part are studied. The state of the art algorithms as well as open problems are presented.

The article "*The evolution of production systems from Industry 2.0 through Industry 4.0*", by **Yong Yin, Kathryn E. Stecke and Dongni Li**, analyzes new tendencies in demand and supply networks and new organizations of production. Some comparisons between *seru* systems and cellular manufacturing are reported. The concepts of Industry 4.0 with equipment and other production resources connected to the Internet of Things are discussed. The specificity of demand, product architecture changes and future possible impacts of 3D printing are mentioned.

Srinivas Talluri, Jiho Yoon, and Claudia Rosales, in the paper "*Inter-firm partnerships – strategic alliances in the pharmaceutical industry*", deal with contracting and strategic partnership issues on the example of the alliances between startups and big pharmaceutical companies. The authors search for optimal decisions for each contract option and provide insights for all partners.

ManMohan S. Sodhi and **Christopher S. Tang**, in the paper *“Corporate social sustainability in supply chains: A thematic analysis of the literature”*, discuss the literature on social sustainability in supply chains. Different research methodologies are analyzed. Major themes are identified concerning the social, economic or environmental sustainability issues and their integration.

The article *“Optimizing integrated inventory policy for perishable items in a multi-stage supply chain”*, by **Alexandre Dolgui**, **Manoj Kumar Tiwari**, **Yerasani Sinjana**, **Sri Krishna Kumar**, and **Young Jun Son**, analyzes some general properties of the considered problem and suggests a new genetic algorithm to optimize an integrated inventory policy in such a supply chain.

The paper *“Performance evaluation of two-machine lines with generalized thresholds”* by **Tullio Tolio** and **Andrea Ratti** suggests a novel analytical model for evaluating the performance of two-machine continuous flow production lines with finite buffer capacity and unreliable machines with multiple up and down states. The model is based on a new concept of generalized thresholds.

Kelsey M. Taylor and **Stephan Vachon**, in the paper *“Empirical research on sustainable supply chains: IJPR’s contribution and research avenues”*, give an exhaustive analysis of articles published in IJPR on empirical research for sustainable supply chain management. The authors conclude that in the most of cases the environmental dimensions of sustainability are considered rather than the social dimensions. Consequently, the social dimensions need to be better studied and integrated into sustainable supply chain management. This is an interesting and important direction for future research.

Patricia van Loon, **Charles Delagarde** and **Luk N. Van Wassenhove** present a paper entitled *“The role of second-hand markets in circular business: a simple model for leasing versus selling consumer products”*. This paper studies a closed-loop system with leased products. The objective is to calculate the total cost for clients and profitability for producers for this circular economic system and compare them to the same characteristics for a traditional linear economic system where products are sold. A simple analytical model is proposed, it can be used to explain business models of circular economy.

The article *“From industrial districts to SME collaboration frames”* by **Agostino Villa** and **Teresa Taurino**, describes a general conceptual model of a SME cluster, then this conceptual model is used to build an formal model for mid-term cluster management. The formal model can be employed to evaluate the cluster performances and the results of collaboration among SMEs. An analysis of SME clusters in different European countries is also presented.

The article *“Performance analysis and design of competitive business models”* by **Nukala Viswanadham** define a unified business model of a company and its components. The author shows that it is a generalization of all other business models known in the literature. Then a general framework for business model analysis is introduced. The model and framework are used to compare traditional retail and e-retail and discuss the issues involved in business model change.

Finally, the paper “*Data cleansing for energy-saving: A case of cyber-physical machine tools health monitoring system*” by **Changyi Deng, Ruifeng Guo, Chao Liu, Ray Y. Zhong and Xun Xu**, proposes data cleansing algorithms. These algorithms offer a reliable and accurate data acquisition with a low energy consumption to assure a long lifetime of wireless sensor networks.

To celebrate the 55th volume anniversary of IJPR, we also already published or announced several *other special issues edited by the Associate Editors* of the journal. The objective was to explain the journal policy in each area, priority topics for the next years, Editor’s vision of the area history and perspectives. The AE of IJPR have invited outstanding specialists to present surveys and discussion papers, these issues are also open for regular submissions without a specific invitation. Other special issues, edited by eminent researchers and focused on new topics and research challenges in our domain, were also published in 2017. Some of new issues are announced; I invite you to consult the website of the journal.

Several papers published in IJPR in 2017 will be awarded; the announcement of awards will be done in the beginning of 2018. We also launched a competition for best state of the art papers: the journal will deliver prizes for papers presenting innovative and strong visions of the history and the future of different topics in Production Research. The results of this second competition will be known by the end of 2018.

I hope you will appreciate the papers of this special issue and invite you to read regularly papers published in IJPR and submit the best of your work to our journal.

References:

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