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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.

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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.

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Duck Young Kim · Gregor von Cieminski ·
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Advances in Production Management Systems


Smart Manufacturing and Logistics
Systems: Turning Ideas into Action

IFIP WG 5.7 International Conference, APMS 2022
Gyeongju, South Korea, September 25–29, 2022
Proceedings, Part II

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Preface

Over the past few years, we have been going through tough times with the COVID-19 pandemic. This coincides with other fundamental risks to the global economy. If we look at the manufacturing and logistics industries, we have experienced an ever more challenging environment in the global supply chains and networks. Sustainable energy management and global environmental issues are no longer just regulations but top priorities for competitiveness and even survival. Most manufacturers and logistics providers have nowadays to operate in very volatile, uncertain, complex, and ambiguous market conditions. For example, product lifecycles are becoming shorter and shorter; customers' demands are turning out to be highly unpredictable and unbounded; raw material and energy prices are being subject to sharp increases; and transport, logistics, and distribution systems are being demanded with almost impossible delivery times, all threatening the break-even point of manufacturing and logistics enterprises.

To meet these urgent business and operational challenges, many studies on manufacturing and logistics management systems have been conducted in academia. Some research topics such as Industry 4.0, digital transformation, and cyber-physical production systems are buzzwords in many consulting firms without concrete action plans. Therefore, the International Conference on Advances in Production Management Systems (APMS 2022) in Gyeongju, South Korea, aimed to bridge the gap between academia and industry in the development of next-generation smart and sustainable manufacturing and logistics systems. The conference spotlighted internationally renowned keynote speakers from academia and industry, and the active participation of manufacturers, their suppliers, and logistics service providers.

A large international panel of experts reviewed 153 submissions (with a minimum of two single-blind reviews per paper) and selected the best 139 papers to be included in the proceedings of APMS 2022, which are organized into two parts. The topics of special interest in the first part include AI and Data-driven Production Management; Smart Manufacturing and Industry 4.0; Simulation and Model-driven Production Management; Service Systems Design, Engineering and Management; Industrial Digital Transformation; Sustainable Production Management; Digital Supply Networks; and Urban Mobility and City Logistics.

The conference featured special sessions to empathize with the real challenges of today's industry, and accordingly, to exchange valuable knowledge and promote discussions about new answers while emphasizing how to turn technological advances into business solutions. The following important topics were actively discussed in the special sessions and these topics are included in the second part of the APMS 2022 proceedings: Development of Circular Business Solutions and Product-Service Systems through Digital Twins; "Farm-to-Fork" Production Management in Food Supply Chains; Digital Transformation Approaches in Production Management; Smart Supply Chain and Production in Society 5.0 Era; Service and Operations Management in the

Context of Digitally-enabled Product-Service Systems; Sustainable and Digital Servitization; Manufacturing Models and Practices for Eco-efficient, Circular and Regenerative Industrial Systems; Cognitive and Autonomous AI in Manufacturing and Supply Chains; Operators 4.0 and Human-Technology Integration in Smart Manufacturing and Logistics Environments; Cyber-Physical Systems for Smart Assembly and Logistics in Automotive Industry; and Trends, Challenges and Applications of Digital Lean Paradigm.

APMS 2022 was supported by the International Federation of Information Processing (IFIP), and it was organized by the IFIP Working Group 5.7 on Advances in Production Management Systems (APMS) established in 1978, the Department of Industrial and Management Engineering of Pohang University of Science and Technology (POSTECH), the Korean Institute of Industrial Engineers (KIIE), and the Institute for Industrial Systems Innovation of Seoul National University. The conference was also supported by four leading journals: Production Planning & Control (PPC), the International Journal of Production Research (IJPR), the International Journal of Logistics Research and Applications (IJLRA), and the International Journal of Industrial Engineering and Management (IJIEM).

We would like to give very special thanks to the members of the IFIP Working Group 5.7, the Program Committee, the Organizing Committee, and the Advisory Board, along with the reviewers of each submission. Finally, we deeply appreciate the generous financial support from our sponsors, namely, Pohang Iron and Steel Company (POSCO), POSTECH, and the Institute for Industrial Systems Innovation of Seoul National University.

September 2022

Duck Young Kim
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