



Responsible & sustainable manufacturing

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Responsible & sustainable manufacturing

Responsible and sustainable manufacturing deals with the development of strategies, methodologies and management of competitive, agile and responsive technologies to address legislative mandates, ethical standards and customer needs, while maintaining profitability and ecofriendly ideals throughout the lifecycles of products and services. Thus, manufacturing has become smarter, accountable, complex and multifaceted. This involves, for example, incorporating environmental thinking into new product development as well as the end-of-life management of the product after its useful lifecycle. Thus, academicians and practitioners have been seeking solutions to problems related to the life cycle of products, disassembly, remanufacturing, and green practices (Özceylan and Gupta 2021).

This special issue presents a compilation of the recent work done in a variety of topics within responsible and sustainable manufacturing. The six papers included in this special issue demonstrate the assortment of fronts where research activity is taking place in the general area of responsible and sustainable manufacturing.

The first paper, 'Trade-in-to-Upgrade as a Marketing Strategy in Disassembly-to-Order Systems at the Edge of Blockchain Technology' (Tozanli, Kongar, and Gupta 2020), presents the use of IoT-embedded products in a blockchain-enabled disassembly-to-order system to determine the optimal trade-in-to-upgrade policy. A discrete-event simulation model is developed to obtain the expected cost of the disassembly-to-order system. Optimal incentives for varying product qualities are then computed by utilising this cost in the trade-in policy model.

In the next paper, 'Pressure or Premium: What works best where? Antecedents and Outcomes of Sustainable Manufacturing Practices', Gouda and Saranga (2020), empirically test the antecedents and consequences of sustainable manufacturing practices across emerging and developed countries. Their findings suggest that while customer's willingness to pay has a significant impact on sustainable manufacturing practices everywhere, stakeholder pressure can influence their adoption in some countries but not in China. They also found that companies that practice sustainability may also benefit from cost reduction and quality improvement.

The third paper, 'Value Depreciation Factors for New and Remanufactured High-Technology Products: A Case Study on iPhones and iPads' (Zhou and Gupta 2020), involves two high-technology products (viz., Apple iPhone and Apple iPad). These products are replaced by new generation models quickly due to their rapid development. Products belonging to earlier generations become less demanding. Customer's acceptance for outmoded remanufactured items is even less. Learning how value depreciates is vital for the sellers to make a wise price decision for new and remanufactured products belonging to various generations. The authors found significant influence in four categories including market factors, technology factors, appearance factors, and customer's attention factors.

The fourth paper, 'Integrated Disassembly Line Balancing and Routing Problem' (Kenger, Koç, and Özceylan 2020), integrates and simultaneously optimises the disassembly line balancing and routing problems. The authors consider several scenarios including single component distribution, multi-component distribution, inventory cost, and multi-period conditions and propose five linear and non-linear mathematical models to solve them. They analyse and quantify the benefits of integrating the two problems using extensive computational experiments conducted on generated benchmark instances.

The fifth paper, 'The Organic Joint Point of New Kinetic Energy and Green Development in Chinese Manufacturing SMEs' (Luo, Jie, and Li 2020), constructs a green practices evaluation model, which is verified by partial least squares structural equation modelling and multi-group analysis. The results show that green practices result in economic, environmental, resource and social benefits.

The final paper, 'Exploring the impacts and contributions of maintenance function for sustainable manufacturing' (Holgado, Macchi, and Evans 2020) studies advanced practitioners of maintenance management and finds the related impacts and contributions of best practice maintenance toward sustainable manufacturing operations. The authors conduct a maintenance function's centred empirical analysis in nine manufacturing companies from diverse sectors. The analysis confirmed

that the maintenance function in plant operations and decision-making led to significant economic, environmental, and social benefits.

It is our hope that this special issue will inspire further research in responsible and sustainable manufacturing and motivate new researchers to get interested in this all too important field of study. This special issue would not have been possible without the devotion and commitment of the authors: they have been very patient in preparing and revising their manuscripts. We thank the reviewers for providing constructive and timely reviews. We would also like to document our appreciation to Professor Alexandre Dolgui, Editor-in-Chief of *International Journal of Production Research*, for encouraging us and giving us the opportunity to edit this special issue.

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