Editorial

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The prolonged awareness about sustainability and the need for eco-friendly products has enforced the manufacturing firms to re-evaluate their business activities (Singh and Rathi, 2023). Manufacturing activities are equally responsible for the increase in earth temperature to 3°C by the end of this century (Shivanna, 2022). This temperature increment is far away from the objectives of the Paris Agreement that plans to confine it to up to 2°C (Kaswan and Rathi, 2020). Industries are among the leading contributors to worldwide greenhouse gases (GHGs) emissions that disrupt the coherence of sustainability (Hallam and Contreras, 2016). Sustainability provides a better balance at the triple bottom line in the economy, thus, for the betterment of overall balance, manufacturing units are focusing on sustainable growth (Zekhnini et al., 2022). On other hand, to compete the adverse effect of the COVID-19 pandemic on the manufacturing sector, it is necessary to produce the products with minimal waste and environmental impacts (Orji and Ojadi, 2021). In this context, manufacturing organisations are adopting various operational excellence (OPEX) approaches to mitigate such issues (Antony et al., 2022). Among OPEX approaches, Lean and Green, both are powerful approaches that have proven their ability in industries since their inception (Al Zaabi et al., 2022). In

literature, some Lean and Green tool sets and their interactions have been developed to mitigate waste, negative environmental impacts, and carbon footprints, etc. to improve sustainability dynamics individually (Garza-Reyes, J2015).

The adoption of individual methodology laid a massive burden on any firm due to the requirement of separate teams, infrastructure, roadmap, etc. Also, some external agents like strict Green implementation policy and COP 26 targets put the manufacturing setting into pressure for making cleaner production and zero waste simultaneously (World Health Organization, 2021). Thus, it becomes essential to reconcile and align the Lean and Green technologies to implement in manufacturing setting through a single platform and unique model. This goal has been targeted through the special issue (SI) on 'Strategic reconcile of Lean and Green technologies for sustainable manufacturing'. Therefore, this SI aims for a better understanding of Lean and Green technologies together from the prospective of sustainable development.

This SI consists numerous significant implications for industrial managers to enhance environmental and societal sustainability with superior quality characteristics within their organisations. Moreover, the articles in this issue offer a practical roadmap to foster synergy among Lean and Green technologies for alteration of traditional manufacturing system into sustainable system. Besides, this SI encompasses some conceptual frameworks related to integration of Lean and Green followed by numerous case studies exemplifying the successful implementation of OPEX technologies in various domain. These resources serve as valuable assets for industrial managers aiming to align their operations with the targets set by various environmental protection agreements. Additionally, the articles within this SI aid in identifying relevant metrics pertaining to environmental and social sustainability, addressing the specific metrics that should be considered at different stages of implementing OPEX technologies with continuous improvement. Overall, this SI facilitates to industrial managers and practitioners in understanding the diverse aspects of OPEX technologies for manufacturing sustainability.

References

Al Zaabi, Y., Antony, J., Garza-Reyes, J.A. and Tortorella, G. (2022) 'Operational excellence methodologies in the energy sector: a systematic literature review', *Total Quality Management & Business Excellence*, Vol. 34, Nos. 9–10, pp.1173–1195.

Antony, J., Sony, M., McDermott, O., Swarnakar, V., Galli, B., Doulatabadi, M. and Kaul, R. (2022) 'An empirical study into the reasons for failure of sustaining operational excellence initiatives in organizations', *The TQM Journal*, Vol. ahead-of-print, No. ahead-of-print, https://doi.org/10.1108/TQM-05-2022-0176.

Garza-Reyes, J.A. (2015) 'Lean and Green – a systematic review of the state of the art literature', *Journal of Cleaner Production*, Vol. 102, No. 1, pp.18–29.

Hallam, C. and Contreras, C. (2016) 'Integrating Lean and Green management', *Management Decision*, Vol. 54, No. 9, pp.2157–2187.

Kaswan, M.S. and Rathi, R. (2020) 'Green Lean Six Sigma for sustainable development: integration and framework', *Environmental Impact Assessment Review*, Vol. 83, No. 7, p.106396.

Orji, I.J. and Ojadi, F. (2021) 'Investigating the COVID-19 pandemic's impact on sustainable supplier selection in the Nigerian manufacturing sector', *Computers & Industrial Engineering*, Vol. 160, No. 10, p.107588.

Shivanna, K.R. (2022) 'Climate change and its impact on biodiversity and human welfare', *Proceedings of the Indian National Science Academy*, Vol. 88, No. 2, pp.160–171.

Singh, M. and Rathi, R. (2023) 'Implementation of environmental Lean Six Sigma framework in an Indian medical equipment manufacturing unit: a case study', *The TQM Journal* https://doi.org/10.1108/TQM-05-2022-0159.

World Health Organization (2021) *COP26 Special Report on Climate Change and Health: The Health Argument for Climate Action*.

Zekhnini, K., Cherrafi, A., Bouhaddou, I., Chaouni Benabdellah, A. and Bag, S. (2022) 'A model integrating Lean and Green practices for viable, sustainable, and digital supply chain performance', *International Journal of Production Research*, Vol. 60, No. 21, pp.6529–6555.