Editorial

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Biographical notes: Jayakrishna Kandasamy is a Professor in the School of Mechanical Engineering at the Vellore Institute of Technology University, India. His research is focused on the design and management of manufacturing systems and supply chains to enhance efficiency, productivity, and sustainability performance. More recent research is in the area of developing tools and techniques to enable value creation through sustainable manufacturing, and circular supply chain management. He is ranked among the Top 2% most influential researchers globally in the prestigious Stanford University World Ranking. He has also been awarded Outstanding Professor in Supply Chain Management Award by IEOM Society and IEI -Young Engineer Award.

V. Raja Sreedharan is a distinguished Senior Lecturer in Operations and Supply Chain Management at Cardiff Metropolitan University, where he also leads as the Program Director of the MSc Supply Chain Master's Program. Before joining Cardiff Metropolitan University, he served as a supply chain Analytics Lecturer at the University of Bradford's School of Management in the UK. He has an impressive record of publications in peer-reviewed journals. His

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research primarily addresses the challenges of managing volatility, uncertainty, complexity, ambiguity (VUCA) in business operations, focusing on the productivity paradox and process enhancement to foster sustainable business practices.

Purush Damodaran expertise spans large-scale optimisation, logistics, simulation, scheduling, Lean, and Six Sigma. He crafts mixed-integer linear formulations and algorithms for real-world problems, including notebook feature upgrades, VLSI cell placement, and electronics manufacturing scheduling. His work extends to order acceptance, cruise crew scheduling, railroad and warehouse optimisation, and healthcare patient flow. He develops simulation models for server assembly, sensor lines, and snow removal. His research focuses on lead elimination in electronics, process improvements, and Lean Six Sigma application. He collaborates with industries on critical growth challenges, seeking real-life, and impactful problems.

Ponnambalam Govindarajan boasts 43 years of experience, with 41 dedicated to academia and two to manufacturing. Currently Dean (Research) at AMET University, Chennai, he previously served as a Senior Professor at VIT University, and held professorships at University Malaysia Pahang and Monash University Malaysia. His expertise spans robotic assembly lines, manufacturing, supply chain management, optimisation, and swarm robotics. he has authored over three hundred publications. A Fellow of the Institution of Mechanical Engineers (UK) and a Chartered Engineer, he is also a senior IEEE member.

The convergence of global competition, rapid technological advancements, and increasing customer expectations has placed unprecedented pressure on organisations across all sectors. In this dynamic environment, the pursuit of operational excellence has become paramount, and Lean and Six Sigma methodologies have emerged as powerful tools for driving efficiency, quality, and performance. This special issue of the *International Journal of Six Sigma and Competitive Advantage*, focusing on *Lean and Six Sigma Applications – Manufacturing and Beyond*, aims to capture the latest research, best practices, and innovative applications of these methodologies.

While Lean and Six Sigma have traditionally found a strong foothold in manufacturing, their principles of waste reduction, process optimisation, and data-driven decision-making are universally applicable. This special issue recognises this broader potential and showcases how these methodologies are being effectively implemented in diverse industries, including service, healthcare, logistics, finance, and even government and public services. The articles presented here demonstrate the adaptability and power of Lean and Six Sigma in addressing a wide range of challenges.

This collection of papers offers valuable insights into several key areas. We see examples of how Lean and Six Sigma are being integrated with cutting-edge technologies like AI, IoT, and Industry 4.0, creating new opportunities for process optimisation and quality control. The papers also highlight the importance of robust quality improvement methodologies and tools, emphasising data-driven approaches to problem-solving. Furthermore, several case studies provide practical examples of successful Lean and Six Sigma implementations, offering valuable lessons learned and demonstrating the tangible benefits that can be achieved.

The issue features a diverse range of topics, from scrap reduction in confectionery plants and automotive electronics manufacturers to improving process capability in

capacitor manufacturing and assessing the enablers of Green Lean Six Sigma in MSMEs. The application of DMAIC in a cybersecurity process underscores the adaptability of these methodologies to even the most modern and complex operational challenges. The inclusion of research on TQM implementation barriers and the exploration of AI-driven quality control techniques further enrich the scope of this special issue.

We are particularly pleased to have received a strong response to our call for papers, with submissions from leading researchers and practitioners in the field. The rigorous peer-review process ensured that only the highest quality papers were selected for publication. We extend our sincere gratitude to the authors for their valuable contributions and to the reviewers for their expertise and dedication.

This special issue is intended to serve as a valuable resource for professionals, researchers, and students interested in Lean and Six Sigma. We hope that the insights and examples presented here will inspire further innovation and contribute to the continued advancement of these powerful methodologies. As organisations continue to navigate an increasingly complex and competitive landscape, the principles of Lean and Six Sigma will undoubtedly play a crucial role in driving success. We believe this special issue offers a timely and relevant contribution to the field, highlighting the transformative potential of Lean and Six Sigma across a wide spectrum of industries. We encourage readers to engage with the content, share their own experiences, and contribute to the ongoing evolution of these essential methodologies.