Industry 4.0 as enablers in Lean Six Sigma Initiatives

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Abstract

Lean Six Sigma and Industrial 4.0 are two powerful approaches being widely discussed by researchers and practitioners. Even, these methodologies were rooted independently, but both are aiming to gain competitiveness and serve the customer needs. The aim of the lean six sigma (LSS) philosophy is to achieve the quality levels of 3.4 parts per million defects by reducing the waste and variations in the processes. Industry 4.0 is mainly focusing on the digitalization of manufacturing activities with powerful data analysis methods. There has been limited literature discussing the synergy between Industry 4.0 and LSS. Most LSS tools and techniques are based on traditional statistical techniques and operational tools. The objective is this presentation is to propose how the industry 4.0 enabling technologies can be exploited as enablers in achieving the Six Sigma Quality Level. The six-sigma problem-solving methodology, Define-Measure-Analyse-Improve-Control (DMAIC) is related to the industry 4.0 enabling technologies. The presentation clarifies how each of the DMAIC phases can benefit from digital technologies. The presentation concludes with proposed agenda for further research

Acknowledgements

Biography

Adnan Hassan is an Associate Professor in the School of Mechanical Engineering, Universiti Teknologi Malaysia (UTM). He is a Professional Technologist (Ts) registered with the Malaysia Board of Technologist (MBOT). He earned B.Sc. (Hons: Cum Laude) in Industrial Engineering from the University of Miami, Florida, U.S.A (1986), M.Sc. in Industrial Measurement Systems from Brunel University London, U.K. (1992), and Ph.D. in Mechanical Engineering from UTM (2002). He has held several administrative positions in the Faculty of Mechanical Engineering UTM, inclusive as the Head of Department (Manufacturing and Industrial Engineering) (2007 – 2009). From Nov 2009 till June 2011, he was seconded to King Abdul Aziz University (KAU), Saudi Arabia where he was the founding Chairman for the Department of Industrial Engineering, KAU Rabigh Branch. His expertise has been recognized where he has served as an assessor for Malaysia Qualification Agency since 2003. He has served as an External Programme Assessors, external thesis examiners for several universities in Malaysia. Internationally, he has been invited by Indonesian and Sudanese Universities to share his knowledge related to industrial engineering teaching and research related topics. He serves as a regular reviewer for several international journals published by Elsevier, Taylor & Francis, and Emerald. The IEOM Society International has recognised him the Outstanding Professor in Lean Six Sigma Award (2021) in appreciation of his achievements and contributions in research and teaching, and services to the profession.