

Bridges to The Industry 5.0/4.0 and Society Based on Agenda 2030: A Literature Review

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Abstract

This paper aims to discuss Industry 4.0 (I4.0) implementation using a people-centric perspective of sustainable development goals (SDG). A literature review of 30 papers selected from Scopus (2018 to 2023) using terms I4.0, human, workers, social topics, and SGD, raised. The papers were analyzed focusing on the SDG approaches in the explored integrated topics. Findings indicate that the SDG 9 is the most approached, concerning how current industrial infrastructure has to be modified in terms of operational capacity, processes and required resources to integrate new technologies in a sustainable way, combining innovation, business performance and the human labor adaptation. SDG 8, 12, 13 and 4 are also highlighted, establishing links with sustainability, economic and human development aspects, while SDG 5, 15 and 16 are still little explored in the analyzed literature. Our paper contributes to reinforcing existing links between the industrial technological transformation and the SDG, pointing human related implications.

Keywords

Sustainable Development Goals (SDG), 2030 Agenda, Industry 4.0, Industry 5.0, Human-centric.

Biographies

Luis Augusto Maia Braggio is a student in the PhD program in Production Engineering at São Paulo State University (UNESP), located in Guaratinguetá, São Paulo, Brazil. He holds a Bachelor of Science degree in Production and Mechanical Engineering from the Industrial Engineering Faculty (FEI) in São Paulo, Master of Science Automobility Engineering in Manufacturing area from the University of Campinas (UNICAMP) and an Executive MBA from Business School of FGV. With over 20 years' experience, Mr. Braggio currently serves as the Quality and Manufacturing Manager at Tupy MWM plant in the state of São Paulo, Brazil. He has been developing career on manufacturing and quality department, with solid execution skills, practiced in industrial operations, with great concentration on continuous improvement, processes efficiency, Lean Thinking, digital transformation, and Industry 4.0. His research interests encompass a wide range of topics, including Manufacturing, Quality, Lean, Knowledge Management, Human development, Industry 4.0 /5.0 and digitalization.

Giovanni Pessin Moschetto is a student in the PhD program in Production Engineering at São Paulo State University (UNESP), located in Guaratinguetá, São Paulo, Brazil. He is graduated in Mechanical Engineering at Centro Universitário FEI, master's degree in Mechanical Engineering at Hochschule Schmalkalden and in Production Engineering at UNESP. Giovanni has more than 6 years of experience in the automotive sector working, both in Brazil and Germany, in areas of Project Management, Engineering, Industrial Maintenance, Production and Logistics. I am currently working as executive assistant of President & CEO. Having worked with industry 4.0 methods and technologies, he is currently researching the worldwide impacts of this transformation on the perspectives of work, production processes and knowledge management in the automotive sector.

Vagner Batista Ribeiro is a PhD student and Master degree in Production Engineering by Sao Paulo State University (UNESP), Sao Paulo, Brazil. He is also post-graduated in Quality Engineering and Production Management, and Graduated in Mechanical Technology. He researches knowledge management in productive systems and the Industry 4.0 impact on managers competencies. He was a Research Intern at University of Sherbrooke-CA. He has also worked in the aeronautical industry as Quality and Industrial Manager.

Jorge Muniz Jr is Associate Professor at São Paulo State University (UNESP), Visiting Professor at the University of Birmingham (UK, 2022-2023), Coordinator of the Professional master's in production engineering - MePEP (2013-2020), Associate Editor of Production Journal (since 2018). He has a PhD in Engineering from UNESP (Production Engineering), with thesis awarded by the Brazilian Association of Production Engineering (ABEPRO) on Labor Knowledge Management, and a master's from the Polytechnic School - USP (Production Engineering), with dissertation distinction related to dissertation on Concurrent Engineering at Embraer. Additionally, he was an executive at the Ford Motor company. He currently works in an international research group on Social Systems and Future Manufacturing (Industry 4.0), and Knowledge Management in Production Systems.