Towards Operational Excellence in the Era of Industry 5.0: A Systemic Model Integrating Human-Centric Technologies and Sustainable Performance

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Abstract. The industry 5.0 marks a step forward from Industry 4.0 by integrating advanced technologies while taking a human-centric and sustainability-centric approach. This new paradigm requires an adaptation of operational excellence practices to align with its core values. How these technologies interact with operation-al excellence methodologies and organizational and behavioral levers to ensure sustainable operational excellence requires a systematic approach to understand the real implications for industrial companies.

The objective of this study is to propose a holistic model of sustainable operational excellence, aligned with the fundamental principles of Industry 5.0, in order to offer a systemic and interdisciplinary understanding of industrial performance in the era of technological and human transformations.

This work adopts a multidimensional approach based on an in-depth analysis of the existing literature, enriched by empirical data, and the results of studies conducted with expert operational excellence practitioners within various organizations.

The findings reveal that Industry 5.0 technologies exert the strongest impact on environmental sustainability and quality, while behavioral levers such as leadership and communication remain decisive drivers of operational excellence. Thus, this study will contribute to a better understanding of how companies can combine technology, sustainability and human collaboration to achieve sustainable operational excellence.

Keywords: Operational excellence, Industry 5.0, Innovation, Agility, Resilience, Sustainability