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 integrat- ing advanced technologies while taking a human-centric and sustainability- centric approach. This new paradigm requires an adaptation of operational ex- cellence 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 ap- proach to understand the real implications for industrial companies.

The objective of this study is to propose a holistic model of sustainable opera- tional excellence, aligned with the fundamental principles of Industry 5.0, in order to offer a systemic and interdisciplinary understanding of industrial per- formance 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 or- ganizations.

The findings reveal that Industry 5.0 technologies exert the strongest impact on environmental sustainability and quality, while behavioral levers such as lead- ership 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 sustain- able operational excellence.

**Keywords:** Operational excellence, Industry 5.0, Innovation, Agility, Resili- ence, Sustainability