

# **Minding the gap between Smart Factory Systems and sustainability performance**

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## **Abstract**

Growing academic research explores how the principles, practices, and enabling technologies of Industry 4.0 can be integrated with Circular Economy (CE) and Sustainable Manufacturing. However, there is a lack of empirical studies about adaptation of these technologies in manufacturing companies. From this perspective, the paper presents a case study of the implementation of Smart Factory System (SFS) in a manufacturing SME based in Nottinghamshire. The use of data and information throughout the production lifecycle creates flexible manufacturing processes that respond rapidly to changes in demand. This drives better quality, productivity and flexibility and helps the company to deliver products in a sustainable way, at a large scale and with better resource utilization and energy efficiency. The study also outlines the challenges presented during design, installation and an early operationalization stages of SFS. This study intends to contribute to the limited research focusing on implementation of Smart Factory System and development of metrics to evaluate the environmental performance in terms of products, processes, organization and people. The study has strong implications for both, theory and practice, aiming to improve SME's Smart Factory System adoption.

## **Keywords**

Smart Manufacturing, Industry 4.0, SMEs, Sustainability, Sustainable Operations