

Peer Review

Review of: "Optimizing Semiconductor Manufacturing for Small and Medium Enterprises: A System-Dynamics and Machine Learning Approach"

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The article presents an innovative approach by integrating system-dynamics modeling, linear programming, and machine learning to enhance the efficiency of SMEs in the semiconductor sector. The proposed framework is relevant as it addresses key challenges in this industry, such as high costs, supply chain volatility, and the need for customized low-volume production. However, despite the strong conceptual and methodological foundation, the paper could benefit from more empirical validation and broader comparisons with existing approaches.

One aspect that could be improved is the justification for the specific modeling tools used. While the article explains the concepts of system-dynamics modeling and linear programming well, it lacks a detailed rationale for why these methods were chosen over other optimization techniques, such as advanced heuristics or hybrid approaches. Additionally, while the machine learning experiments demonstrate high accuracy, there is insufficient discussion on potential biases in the data or how these models could be generalized to different industrial scenarios.

Another critical issue is the lack of a more in-depth case study. The article mentions practical applications but does not provide real-world validation within companies in the sector. The implementation of predictive models and optimization techniques requires rigorous testing in industrial environments to confirm their effectiveness and identify operational challenges. A comparative analysis with traditional methodologies and a more detailed discussion on costs and benefits would make the proposed approach more convincing and applicable to decision-makers in the industry.

Declarations

Potential competing interests: No potential competing interests to declare.