Exploring the Relationship between Circular Economy, Servitisation, and Industry 4.0 Disclosure: Empirical Evidence from Global Fortune 500 Companies

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Abstract
The circular economy (CE) has emerged as a critical component of sustainability reporting. However, companies often need more systematic reporting of their commitments towards using servitisation and I4.0 as CE strategies within their disclosure practices. This study introduces a CE disclosure index to examine the alignment of manufacturing firms' strategies with evolving conditions. Drawing on prior research, we translate conceptual frameworks into practical applications to establish standards for comprehensive CE implementation. A pilot project was conducted to assess the credibility of the CE-disclosure index before presenting our findings. The results suggest that embracing servitisation and I4.0 technologies may enhance the CE by prolonging product lifecycles and facilitating innovation in circular product development. This approach fosters smoother information and product flow, leading to greater transparency in reporting and stakeholder engagement in CE implementation. The CE disclosure index offers a valuable tool for practitioners, government bodies, and society to evaluate the impact of CE-driven change and promote the adoption of CE principles across various sectors.

Keywords: Circular economy, servitisation, industry 4.0, disclosure practices