

Leveraging Digital Technologies for Smart Waste Management in CE: A Literature Review

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Abstract : The study focuses on literature review of leveraging digital technologies such as Internet of Things (IoT), big data analytics (BDA), and artificial intelligence (AI) to optimize waste collection, sorting, and recycling processes, thus promoting a circular economy (CE). The purpose of the study is to introduce how the smart waste management (SWM) systems boost the field compared with the traditional waste management. 27 articles highlight the tangible benefits of digitalization, but addressing barriers to adoption is essential for realizing the full potential of SWM technologies. The results show how digital technologies can be used to monitor and optimize waste collection, resource allocation, and improve efficiency and reduction of the contamination rates. In conclusion, this literature review underscores the transformative potential of digital technologies in advancing SWM systems and promoting CE. Future application should focus strategically 9R or other R strategies to speed up the transformation. Future research should focus on especially addressing challenges and identifying innovative strategies to accelerate the transition toward a more sustainable and circular waste management ecosystem.

Keywords : circular economy, digital technologies, smart waste management, waste management strategies

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