ASSESSING THE ADOPTION OF CIRCULAR ECONOMY PRINCIPLES IN PLASTIC WASTE MANAGEMENT IN NAIROBI METROPOLITAN REGION, KENYA

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DECLARATION AND RECOMMENDATIONS

Declaration

This thesis is my original work has not been submitted for an award of diploma or conferment of degree in any university

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Recommendations

This thesis has been examined, passed and submitted with our approval as University supervisors

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DEDICATION.

This research is dedicated to my family and my daughter Gloria, My Sons Nimrod and Miracle whose resolute support and Encouragement kept me focused throughout the journey of learning.

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ABSTRACT

Circular Economy (CE) tackles environmental and resource challenges by promoting efficiency, reducing waste, and minimizing environmental impact. Globally, these approaches have been applied to address waste management and resource depletion by recovering waste for reuse in production, replacing virgin materials. In Kenya, they gained relevance after the 2017 plastic bag ban, but there is limited data on the adoption of circular economy practices for plastic waste management. This research examined the adoption of Circular Economy (CE) principles in plastic waste management in the Nairobi Metropolitan, Kenya. It specifically assessed CE processes such as segregation at source, collection, sorting, recycling, and reuse, while also evaluating the extent of implementation and effectiveness of strategies like recycling and upcycling. The Nairobi Metropolitan, due to its economic importance and diversity, provided an ideal study area for its concentration of plastic waste handlers. The study utilized an exploratory and descriptive research design to analyze circular economy (CE) adoption comprehensively. Purposive sampling selected relevant units of analysis, with data collected through structured and unstructured interviews, questionnaires, observations, and secondary sources, including government reports and scientific publications. Data validity and reliability were ensured through source triangulation, standardized instruments, and rigorous SPSS, version 20 analysis. Results indicated that facility type significantly influences CE standard adoption, with advanced facilities more effectively implementing CE practices. The findings show that 76% of participants prioritized reducing environmental pollution as their main reason for adopting circular economy principles, reflecting strong stakeholder support for mitigating industrial pollution. This suggests circular economy practices are seen as key to addressing urgent issues like air and water pollution. In contrast, 24% were driven by a personal commitment to reducing their ecological footprint, highlighting a focus on sustainability through resource conservation, waste reduction, and sustainable materials. Proper waste segregation systems were also found to be crucial for CE adoption. However, the type of plastic used in facilities often hindered CE adoption, emphasizing the need for material choices that support CE principles. While awareness of CE improves material separation, it does not guarantee full CE implementation. The study noted a decline in perceived efficacy during the early stages of larger-scale CE activities, highlighting potential challenges in adopting sustainable techniques. The research found out that waste management facilities practice Cascaded recycling which is off the loop hence products made from recycled plastics are of low value and circular economy is about retaining value. The conclusion of the research was that the plastic waste management has very minimal component of CE since value is not retained in the loop. This level of recycling cannot compete with virgin plastic material because of lost value. The research recommends capacity building across the entire plastic value chain, including obligating manufacturers to design products that facilitate recovery and diversion from landfills. This research recommends future studies on cost benefit analysis of CE practices in plastic waste management.