Examining the Potential of Accurate Waste Data to Drive AI Interventions and Inform Policy Reforms for Lagos, Nigeria's Waste Management System

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BACKGROUND

- Lagos, Nigeria, with a population of over 21 million, faces significant waste management challenges
- The city generates over 13,000 metric tons of waste daily
- Rapid urbanization, insufficient infrastructure, and inadequate data practices strain the waste management system
- Challenges include overflowing landfills, environmental contamination, and public health risks
- The informal sector plays a crucial role in waste collection and recycling
- Lack of reliable waste data hinders effective planning, resource allocation, and policy development
- Inaccurate data on waste generation, composition, and flows impedes informed decision-making
- AI-driven solutions and data-driven decision-making have the potential to revolutionize the waste management system
- Accurate waste data is essential for developing targeted interventions and optimizing resource allocation
- This study explores the potential of accurate waste data to drive AI-powered solutions and inform policy reforms in Lagos's waste management sector

RESEARCH QUESTION(S)

How can accurate waste data drive AI-powered solutions and inform policy reforms to transform Lagos's waste management system?

METHODOLOGY

- Qualitative case study of Lagos's waste management system
- Semi-structured interviews with 2 key informants: Head of Operations, LAWMA (60 minutes) and Waste Site Manager, Olusosun Landfill (45 minutes)
- Field observations at Olusosun Landfill, focusing on waste handling practices and data recording procedures
- Document analysis of LAWMA Service Charter and Integrated Waste Management Initiative (IWMI) report
- Thematic analysis using NVivo software
- Theoretical framework integrating Socio-Technical Transitions Theory (STT) and Advocacy Coalition Framework (ACF)

IMPLICATIONS

- Accurate waste data is essential for developing targeted interventions and policies
- AI-driven solutions can optimize waste collection, transportation, and resource recovery
- Inclusive policies and governance structures are needed to engage stakeholders and support the integration of informal waste workers

FUTURE RESEARCH

- Investigate the technical, infrastructural, and human resource challenges in implementing AI solutions
- Explore the economic and financial dimensions of waste management reforms
- Conduct comparative studies across different urban contexts

Fig 1. Make shift settlements on waste site

KEY FINDINGS

- Complex interplay of formal and informal actors in Lagos's waste management landscape
- High proportion of organic waste (45%) and plastics (15%) in the waste stream
- Data gaps and infrastructure challenges hinder effective waste management
- AI technologies and policy reforms have the potential to transform the system

Fig 2. Informal waste pickers sorting waste

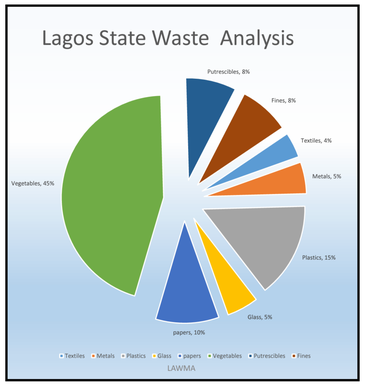

Fig 3. Waste composition in Lagos; LAWMA, 2019

RECOMMENDATION

- Establish a robust data management system
- Leverage AI-driven solutions for waste characterization and route optimization
- Strengthen policy frameworks and governance
- Promote inclusive waste management practices
- Invest in capacity building and infrastructure
- Foster a circular economy approach
- Strengthen monitoring and evaluation

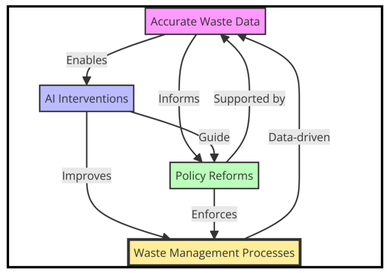

Fig 4. The role of Accurate Waste Data in driving change

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