Reduction Strategies for Food Loss and Waste in South African Supply Chains: An Intervention Study

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Abstract

Food loss and waste represent significant challenges in South African agriculture supply chains, contributing to economic inefficiencies and environmental degradation. A mixed-methods approach combining quantitative surveys with qualitative interviews to assess current practices and identify barriers to reduction efforts. Quantitative data showed a 20% reduction in post-harvest losses after implementing targeted interventions, while thematic analysis revealed common bottlenecks such as inadequate storage facilities and lack of access to appropriate technology. The study identified key areas for improvement but did not find statistically significant differences between intervention groups in waste reduction outcomes. Implementing standardised training programmes for farmers on best practices and providing subsidies for improved infrastructure are recommended next steps. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African agriculture, GIS, supply chain management, participatory action research, sustainable intensification, waste minimization, food security*

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