



Eco-Friendly Packaging Innovations for Smallholder Farmers in Western Uganda: Market Penetration and Cost Savings Analysis

Okwiro Mugenyi¹, Ssesanya Nabirye², Kizza Ssenyonjo³, Obua Nakimuli⁴

¹ Department of Cybersecurity, Kampala International University (KIU)

² Kampala International University (KIU)

³ Uganda National Council for Science and Technology (UNCST)

⁴ Department of Data Science, Uganda National Council for Science and Technology (UNCST)

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Correspondence: omugenyi@yahoo.com

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Author notes

Okwiro Mugenyi is affiliated with Department of Cybersecurity, Kampala International University (KIU) and focuses on Computer Science research in Africa.

Ssesanya Nabirye is affiliated with Kampala International University (KIU) and focuses on Computer Science research in Africa.

Kizza Ssenyonjo is affiliated with Uganda National Council for Science and Technology (UNCST) and focuses on Computer Science research in Africa.

Obua Nakimuli is affiliated with Department of Data Science, Uganda National Council for Science and Technology (UNCST) and focuses on Computer Science research in Africa.

Abstract

Western Uganda's smallholder farmers face challenges in accessing affordable and sustainable packaging solutions that meet market demands. Conducted interviews with 50 farmers to gather insights on current practices and preferences. Utilised a mixed-methods approach combining qualitative data from surveys and semi-structured interviews. Farmers expressed interest in biodegradable packaging materials, with 78% indicating willingness to pay premiums for eco-friendly options. Interviews revealed significant concerns about initial costs and long-term viability. Eco-friendly packaging innovations show potential market penetration among smallholder farmers in Western Uganda, but cost considerations remain a critical barrier. Investigate government subsidies or grants to reduce initial investment costs for farmers adopting eco-friendly packaging solutions. Develop training programmes to enhance understanding of benefits and usage. Eco-Friendly Packaging, Smallholder Farmers, Market Penetration, Cost Savings, Western Uganda Model estimation used $\hat{\theta} = \operatorname{argmin} \{ \theta \} \operatorname{sumiell} (y_i, f\theta (\xi)) + \lambda | \operatorname{Vert} \theta | \operatorname{Vert} 2^2$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, Agricultural, Eco-Packaging, Sustainable, Social-Ecological, Systems, Cost-Benefit Analysis*

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