



# Securing Healthcare Supply Chains in Nairobi Slums through IoT Solutions

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## Abstract

Nairobi slums face significant challenges in healthcare supply chain management due to inadequate infrastructure and security measures. A mixed-methods approach was employed, including IoT device testing, user surveys, and a cost-benefit analysis to evaluate the effectiveness of proposed solutions. IoT devices exhibited an average success rate of 95% in maintaining supply chain integrity, with significant reductions in theft and tampering incidents compared to traditional methods. The IoT solutions demonstrated promise for securing healthcare supplies in Nairobi slums, though further research is needed to ensure scalability and sustainability. Immediate implementation should be prioritised based on preliminary findings, followed by a robust evaluation phase to refine the models and address identified gaps. Model estimation used  $\hat{\theta} = \operatorname{argmin}\{\theta\} \operatorname{sumiell}(y_i, f\theta(\xi)) + \lambda lVert\theta rVert^2$ , with performance evaluated using out-of-sample error.

**Keywords:** *Sub-Saharan, Africa, IoT, SensorNetworks, SupplyChainSecurity, Blockchain, CyberSecurity*

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