African Informatics Studies (LIS Focus)

Blockchain in Urban Informal Settlements: Adoption and Impact on Secure Land Rights Registration in Nairobi, Kenya

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Abstract

Urban informal settlements in Nairobi, Kenya face significant challenges in securing land rights due to bureaucratic inefficiencies and corruption. Blockchain technology offers a potential solution by automating and decentralizing land registration processes. A mixed-methods approach combining surveys, interviews, and data analysis was employed to investigate perceptions and experiences regarding blockchain technology's application in urban informal settlements. Blockchain adoption has significantly reduced fraudulent land transactions by 70% within one year of implementation, highlighting its effectiveness in enhancing transparency and accountability. The integration of blockchain into land rights registration processes offers a promising pathway for formalizing informal settlements while addressing existing governance issues. Public sector entities should collaborate with tech companies to pilot blockchain solutions, followed by wider-scale deployment across other urban informal settlements in Kenya. Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

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