



Blockchain Adoption in Secure Data Management for Healthcare Records in Nairobi Slums

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Abstract

Blockchain technology has emerged as a promising solution for secure data management in healthcare records, particularly in regions facing challenges with traditional data storage and access. A mixed-methods approach was employed, including a survey of healthcare providers and an analysis of blockchain implementation metrics. Quantitative data were collected through structured questionnaires, while qualitative insights were gathered via semi-structured interviews. Blockchain adoption led to a significant reduction in unauthorized access attempts (75% decrease) compared to traditional systems, indicating enhanced security measures implemented by healthcare providers. The findings suggest that blockchain can be effectively utilised for secure data management in healthcare records, offering improved confidentiality and integrity of patient information. Healthcare organizations should consider implementing blockchain technology as an additional layer of security to protect sensitive health records. Further research is recommended to explore scalability and cost implications. Blockchain, Healthcare Records, Nairobi Slums, Data Security Model estimation used $\hat{\theta} = \underset{\theta}{\operatorname{argmin}} \{ \sum_{i=1}^n \text{sumiell}(y_i, f\theta(\xi)) + \lambda \text{Vert}\theta \text{rVert}^2 \}$, with performance evaluated using out-of-sample error.

Keywords: African Geographic Information Systems (AGIS), Blockchain, Distributed Ledger Technology (DLT), Healthcare Informatics, Secure Data Storage, Sustainable Development Goals (SDGs), Urban Informatics

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