African Aerial Photography and Remote Sensing (Technology/Methodology)

Blockchain Technology for Supply Chain Transparency in Mineral Extraction in DRC: A Methodological Framework

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Abstract

This study addresses a current research gap in Computer Science concerning Blockchain Technology for Supply Chain Transparency in Mineral Extraction in DRC in Central African Republic. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured analytical approach was used, integrating formal modelling with domain evidence. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Blockchain Technology for Supply Chain Transparency in Mineral Extraction in DRC, Central African Republic, Africa, Computer Science, methodology paper This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. 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.

Keywords: *African geography, blockchain technology, supply chain management, transparency models, data integrity, geographic information systems, smart contracts*