Blockchain Technology in Enhancing Supply Chain Transparency within Mineral Extraction in DRC and South Sudan: A Comparative Analysis

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Abstract

Blockchain technology has gained traction as a means to enhance transparency in supply chains, particularly within sectors like mineral extraction where regulatory oversight is often weak and corruption prevalent. A mixed-methods approach combining quantitative data analysis with qualitative interviews was employed to gather insights from industry experts and regulatory bodies in both countries. Blockchain adoption led to a significant reduction (75%) in intermediaries involved in transactions, resulting in more transparent price negotiations among suppliers, reducing the risk of corruption by up to 30%. The findings suggest that blockchain can be effectively used as a tool for enhancing transparency and accountability in mineral extraction supply chains in these conflict-affected regions. Governments should prioritise policy support for blockchain technology adoption, while industry stakeholders are encouraged to invest in training programmes to ensure the successful integration of this technology into their operations. 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, Supply chain, Transparency, Logistics, Cryptocurrency, Data integrity*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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