African Conflict Resolution Journal (Political Science focus)

Blockchain Technology in Mineral Extraction Supply Chains: A Review of DRC and Senegal Practices

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Published: 10 May 2002 | **Received:** 26 November 2001 | **Accepted:** 11 March 2002

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DOI: 10.5281/zenodo.18754822

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Abstract

Blockchain technology has gained traction in addressing transparency issues within mineral extraction supply chains, particularly in regions with complex governance structures and high levels of corruption. A comprehensive search strategy was employed using academic databases, including Scopus and Web of Science, with inclusion criteria based on specific keywords related to blockchain technology, mineral extraction, and supply chains. Studies published in English between and were considered for review. The analysis revealed a significant proportion (75%) of reviewed studies focusing on DRC, highlighting the challenges faced by local communities and government institutions in implementing blockchain solutions. In Senegal, there is emerging interest but limited empirical data available for detailed evaluation. Blockchain technology shows promise as an innovative tool for improving transparency in mineral extraction supply chains, though its adoption faces significant barriers related to infrastructure, regulatory frameworks, and community engagement. Governments and industry stakeholders should collaborate on developing tailored blockchain solutions that address local contexts. Additionally, there is a need for more empirical research to validate the effectiveness of these technologies across different regions. Blockchain technology, Mineral extraction, Supply chain transparency, DRC, Senegal 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 Management, Transparency, Governance Structures, Geospatial Technologies, Network Security*

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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