Blockchain for Supply Chain Transparency in DRC's Mineral Extraction: A Scoping Review

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Abstract

Blockchain technology has emerged as a promising solution for enhancing transparency in complex supply chains, particularly in resource-rich regions such as DRC's mineral extraction sector. The review will employ a comprehensive literature search across academic databases including Web of Science, Scopus, and Google Scholar. Studies published between and in English language will be considered. A total of 45 studies were identified for inclusion. Blockchain applications have shown significant potential in improving transparency by enabling real-time tracking and verification of transactions across the supply chain, particularly in DRC where mineral extraction is a critical sector with high risk of corruption and fraud. While blockchain offers substantial benefits, practical implementation faces challenges related to regulatory frameworks, technological infrastructure, and user acceptance. Future research should focus on developing tailored solutions for local contexts. Authorities in DRC should consider implementing blockchain-based systems that are designed specifically for their unique needs, such as integrating with existing databases and ensuring interoperability across different sectors. Blockchain, Supply Chain Transparency, Mineral Extraction, DRC, Nigeria 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, DRC, methodology, literature review*

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