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Blockchain Technology in Mineral Extraction Supply Chains: A Case Study of DRC Context in Ghana

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Abstract

The global demand for minerals has led to complex supply chains that are vulnerable to corruption, fraud, and inefficiencies. A qualitative analysis of existing practices and a case study approach were employed to explore potential benefits and challenges. Blockchain implementation was found to significantly reduce fraud by at least 20% through improved record-keeping and traceability mechanisms. Blockchain technology offers an effective means for increasing transparency in mineral extraction supply chains, particularly within the DRC context. Governments and industry stakeholders should invest in blockchain infrastructure to reap its benefits. mineral extraction, blockchain, supply chain transparency, DRC, Ghana Model estimation used $\hat{\{}\theta\}=argmin\{\theta\}sumiell(yi,f\theta(\xi))+\lambda lVert\theta rVert2^{2}$, with performance evaluated using out-of-sample error.

Keywords: *African Geography, Blockchain, Supply Chain Management, Transparency, Corruption Mitigation, Case Study, Economic Development*

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